PULP & PAPER

OUR 30th YEAR . . . DECEMBER 1956

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GREATEST PULP CONFERENCE EVER HELD

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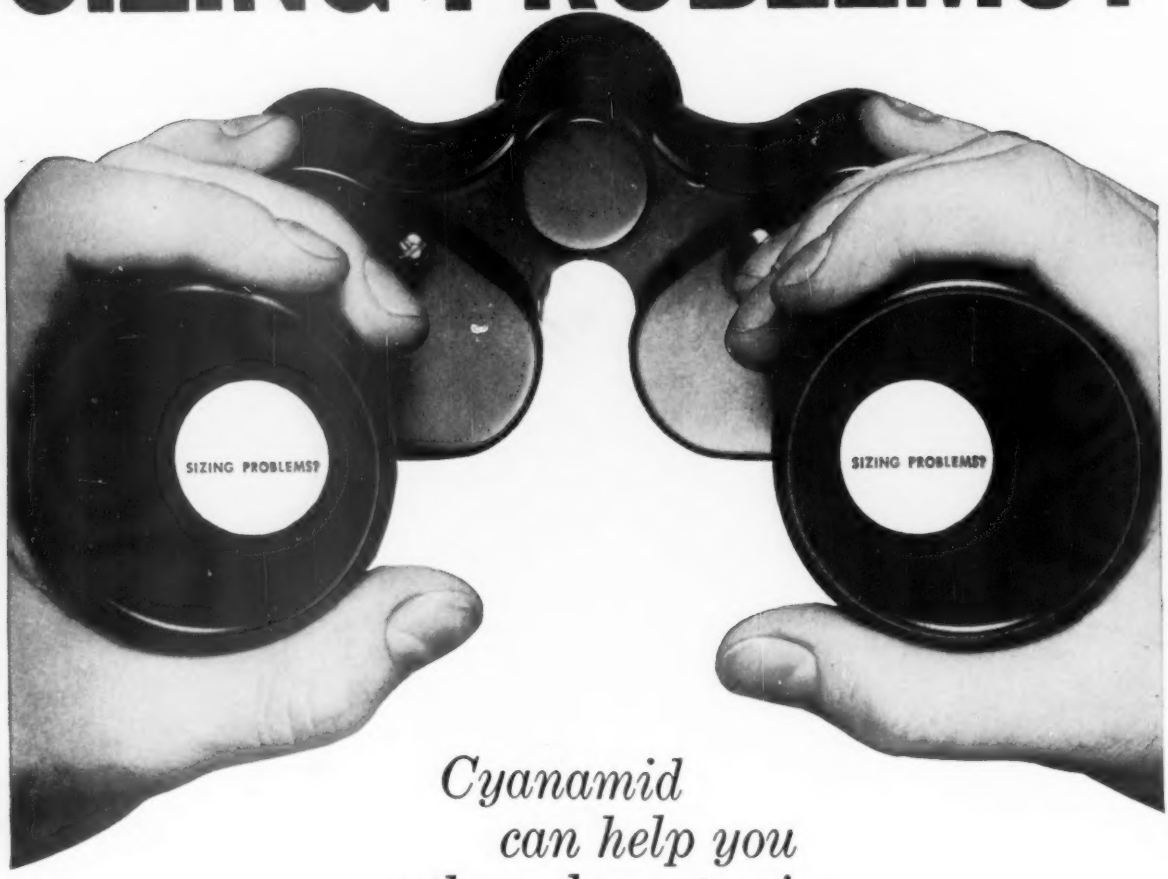
SIZING PROBLEMS?



Cyanamid can help you cut them down to size

It would be hard to find a sizing problem that our Technical Service Staff has not met at one time or another. Out of this experience we have developed a great number of size grades—*more than any other supplier*. That's why we can meet a mill's sizing requirements exactly. With this most complete line, plus our research and application laboratories to back it up, most problems can be quickly cut down to size. Take these problems:

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FOAM? ACCOBRITE® Size offers a *zero* foam index. Or you may find the solution in low-foaming CYFOR Size or non-foaming dark sizes.

BRIGHTNESS? Tops for brightness and color stability are X and WW grades of ACCOBRITE Size.

HIGHER SIZING SPECS? Meet them with CYFOR Size and cut costs or meet requirements unattainable with other sizes.

HANDLING COSTS? You can save handling, storage and charging costs by filling your bulk needs with Cyanamid *liquid* size grades.

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We could go on and on. Perhaps your best bet, though, is to talk over sizing problems with your Cyanamid Technical Service man. He'll help you cut *any* problem involving paper chemicals down to size.

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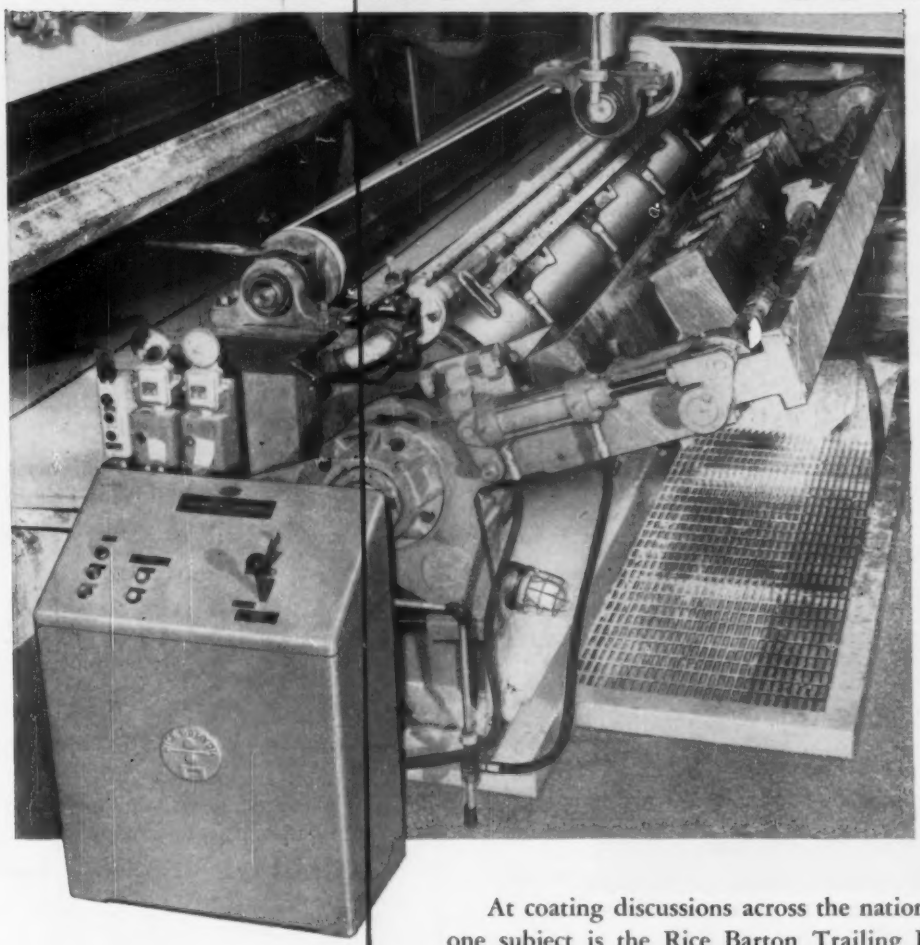
Everybody is talking about the Rice Barton

TRAILING KNIFE COATER



At coating discussions across the nation, the number one subject is the Rice Barton Trailing Knife Coater. Proven by many mills on a wide variety of paper grades, it produces a new high quality of surface levelness at or above today's top paper machine speeds.

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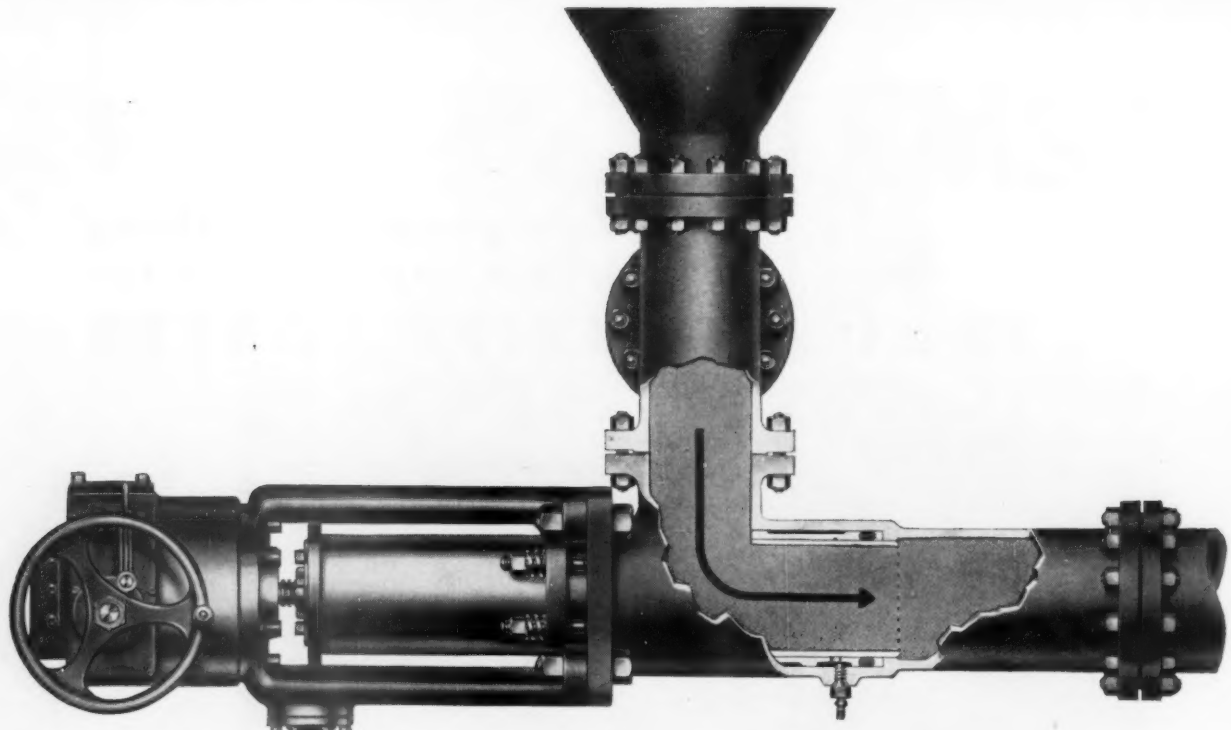
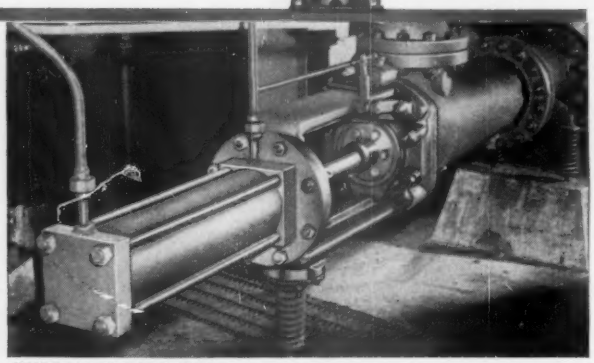


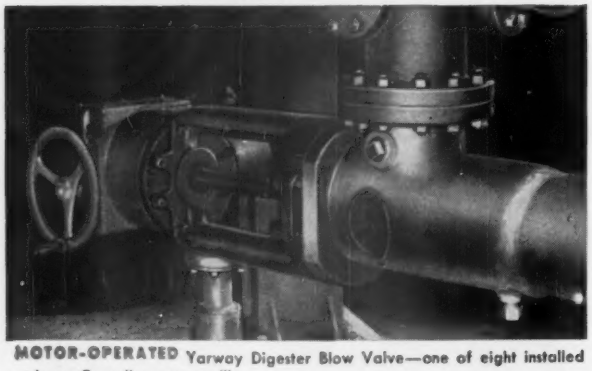
full, free digester discharge



HYDRAULIC-OPERATED Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.

Digesters blow fast and clean with YARWAY Seatless Blow Valves.

The hollow sliding plunger has no pockets where wood chips or tramp materials can hang up.



MOTOR-OPERATED Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

Scores of pulp mills report *lower operating costs* and *increased production* due to YARWAY Digester Blow Valves. One large mill found *savings in operation and maintenance the first year more than paid the cost of their 4 new Digester Valves!*

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PULP & PAPER

December 1956

VOLUME 30
NUMBER 13

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New Orleans 18, La.—3518 Dante St., AM 2762
Portland 4, Ore.—534 SW 3rd Ave., CA 3-6348
San Francisco 5, Calif.—500 Howard St., EX 7-1881
Los Angeles 65, Calif. 3501 Eagle Rock Blvd., CL 5-7194

SUBSCRIPTION RATE (for 12 monthly issues and WORLD REVIEW NUMBER, each year): United States, Canada, Mexico and other Pan American Union nations—1 yr., $4.00; 2 yrs., $6.00; 3 yrs., $8.00. Others—1 yr. $5.00; 2 yrs., $8.00; 3 yrs., $11.00. Single copy, 50¢ (WORLD REVIEW NUMBER, $1.00 per copy).

CHANGE OF ADDRESS: Send subscription orders and changes of addresses to Subscription Dept., PULP & PAPER, 500 Howard St., San Francisco 5, Calif. Include both old and new addresses, and zone number.

PULP & PAPER is published monthly, except July when publication is semi-monthly, at Bristol, Conn., by Miller Freeman Publications, Incorporated.

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Postmaster: P'ease send Notice 3579 to PULP & PAPER, 500 Howard St., San Francisco 5, Calif.

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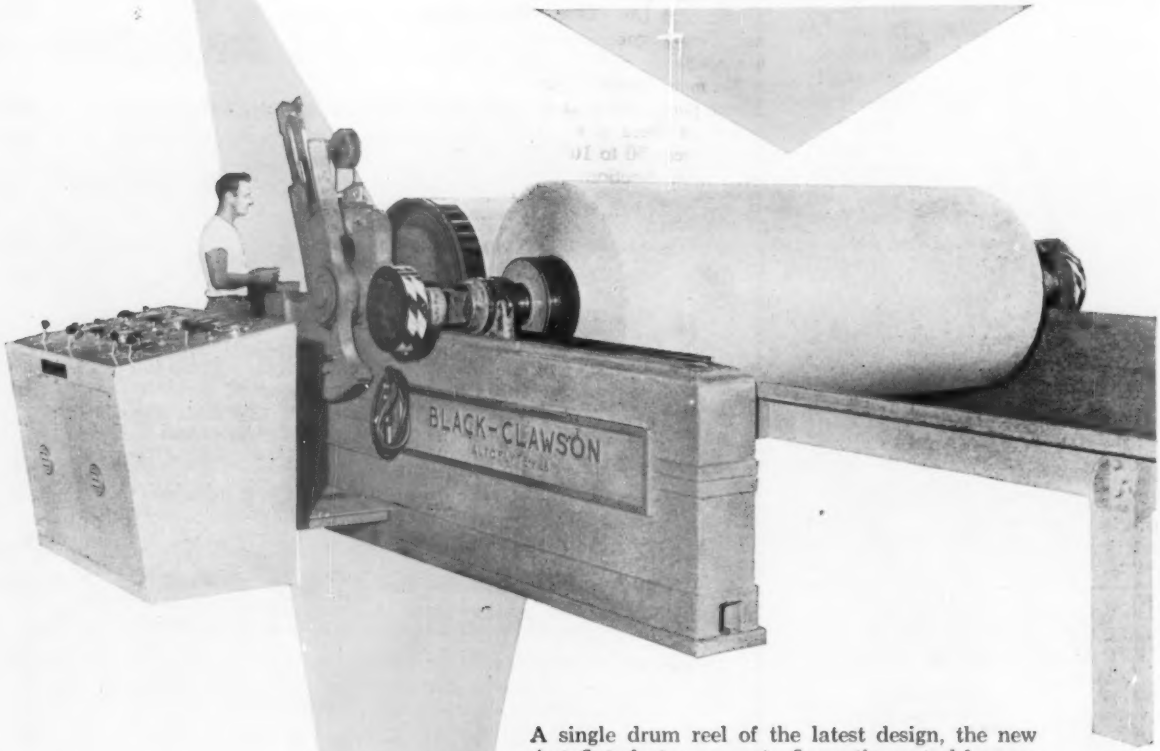
here's the AUTOFLYTE

New Black-Clawson Reel Designed For Automatic, High Speed Operation



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Autoflyte 48—heavy duty model, 48″ drum. Rolls up to nine feet in diameter. Maximum drum face up to 360″.

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EDITOR READS HIS MAIL

From a Man Who Knows His "East"

New York City

Editor: The cover subject on the PULP & PAPER 1956 World Review Number is an excellent photograph in all respects (Picture of paper counter in Pakistan's first pulp and paper mill). The inscription on the inside says that an elderly man is doing the counting. I would like to bet you one lunch that the "elderly" man isn't a day over 35.

ROBERT M. VAN SANT
Elof Hansson Inc.

(Ed. Note–You could be right, Bob. We won't dispute the point with a well traveled man like yourself.)

Writer Visits Site Chosen For 1887 Mill in Mexico

–Tacoma, Wash.

Editor: On a recent trip to Mexico, I inadvertently and unknowingly ran across the site of one of the earliest attempts to establish paper production on the West Coast, and I feel sure there is no one in the industry today that ever knew anything about this venture or its location which is the most improbable one could imagine.

I was on a project of exploration in Baja California which is the 700 mile long peninsula belonging to Mexico south of California. Except for the northern part immediately south of San Diego, the remainder is a desert wilderness of mountains, plateaus and coastal plains. There is nothing which a modern American would classify as a road, but it is passable in suitable equipment such as jeeps and power trucks that can stand gully jumping and heavy going through sand and boulders.

BRIAN SHERA (left), author of letter about ancient Mexican mill, shows off turtle he captured on trip—"a fresh stew ingredient," he said. At right is view of Yucca Valida (Joshua tree) which was to have provided fiber for mill in 1887 in Lower California.

To men interested in geology and desert plant life it is probably unexcelled as there is a constant change about every 50 to 100 miles down the peninsula. Sections are of ancient granitic rock and fantastic boulders strewn around the size of huge buildings. Other parts are of more recent sedimentary or volcanic origin. The cactus and other desert plants that have to withstand several years without rainfall are amazing as to form and tenacity in their fight for life. One of these plants is a variety of the popularly called Joshua tree of California and Arizona (Yucca valida) which grows in thick stands in certain areas and seemed to me to be generally in canyons that break through the coastal range out to the Pacific and at the lower end of dry washes which are at the lower end of interior plateaus. The leaves are stiff and dagger-like, containing good, strong fiber from which one could make rope.

One late afternoon after passing through a forest of yucca, we made our camp on an open flat and before nightfall I noticed what appeared to have once been some human endeavor. There were traces of what might have been walls and ditches, and it remained unexplainable to me at the time, since I wondered why any effort was ever put forth to do anything in that wilderness where nobody now lives. A while ago I was given a publication of the Smithsonian Institute, Volume 115, which concerns the notes and findings of an expedition of the Fish and Wild Life Service that in 1905 explored this vast peninsula on mule back. Some of the camp sites which they described vividly reminded me of choosing the exact same spot 50 years later.

The notation for San Andres, which I have marked on a sketched map, interested me and explained what the endeavor was that I had seen and which puzzled me at the time.

"We reached Punta Prieta, a deserted cattle ranch. This place had been occupied within a few weeks, and we were glad to find a well about 40 ft. deep with a bucket and rope, so we were able to water our stock. From Punta Prieta we continued about 10

MAP OF BAJA CALIFORNIA, showing location of proposed 1887 mil.

miles farther down the trail to San Andres Ranch, at the extreme lower end of the valley. Here the hills on both sides shut in and reduce the valley to a narrow point from which a short canyon leads through the coast hills to the shore of the Bahia de Playa Maria. About a mile of the lower end of the valley had been extensively worked over, and the ruins of well-built houses, machinery, good wells, irrigation ditches, and old fields, showed that a large amount of money had been spent here. We learned that an English corporation operated here in 1887 with the object of making paper from the datilillo or tree yucca (Yucca valida) through veritable forests of which we had made our way across from Yubay. The project had evidently been a failure and from the ruined condition of the improvements it was plain the place had been abandoned many years."

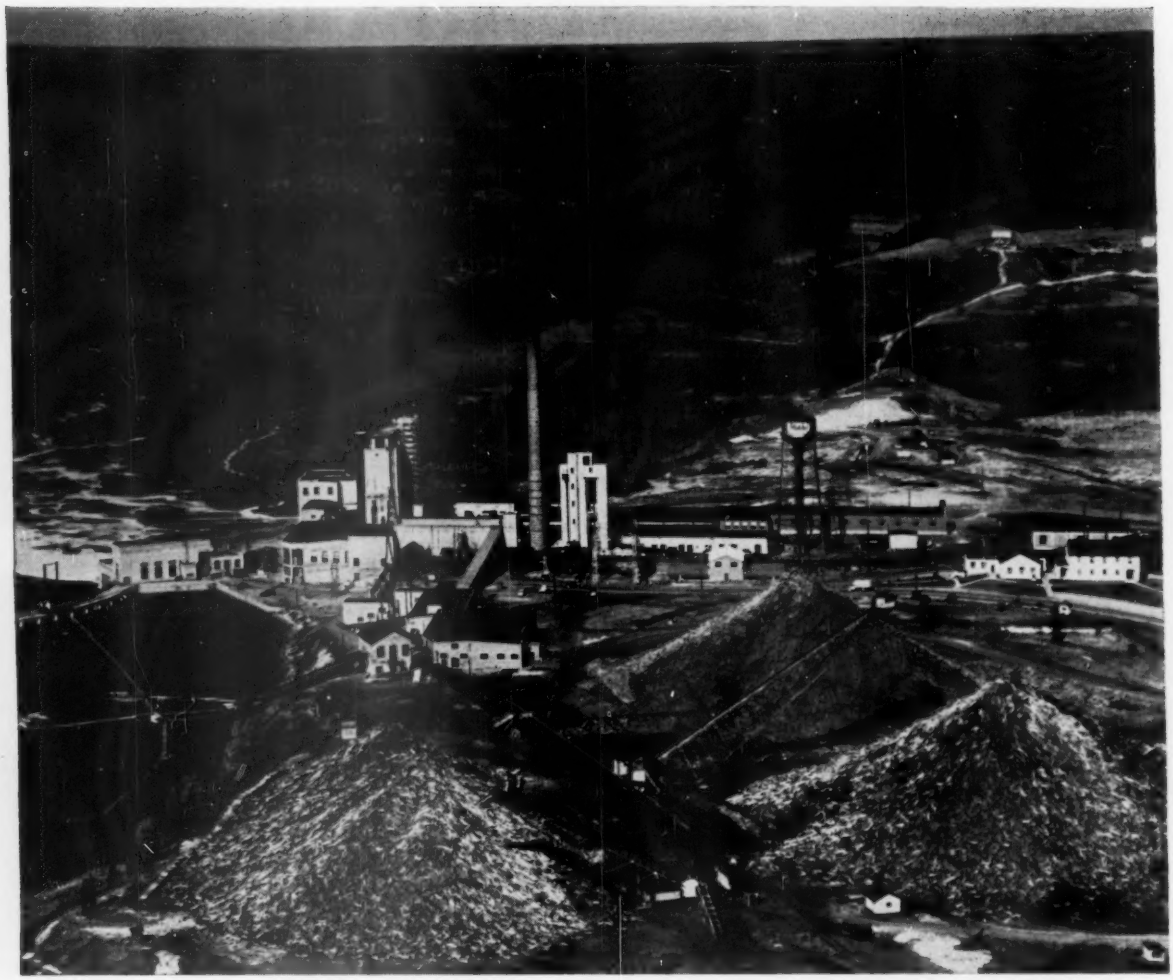
In my estimation, the choice of such a site was true pioneering. Of course, the climate has changed considerably toward the dry side in the last 70 years, even in the last 50, since certain ranches or villages found by the Fish and Wild Life men simply do not exist anymore because there is no water.

BRIAN L. SHERA
Pennsylvania Salt Manufacturing Co. of Washington.

HERE'S HOW to address your letter to this department:

No anonymous letters will be considered but names may be withheld if desired.

The Editor
PULP & PAPER
1791 Howard Street
Chicago 26, Illinois



(Aerial view Abitibi Mill, Smooth Rock Falls, Ontario)

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MEAD *pulp*

NEWS FROM 'ROUND THE WORLD

Swedish Pulp Producers May Be Able to Ship in Winter

—Stockholm

Ice-free shipping lanes are envisioned by Swedish pulp and paper exporters. The new method uses compressor-fed perforated plastic tubes. These would be placed at the bottom of the body of water to be navigated.

Principle is that the compressed air whirls the warmer bottom water toward the surface, melts the ice and at the same time prevents further ice formation.

An experimental plant was tried out in Vasteras last winter, consisting of 1,000 ft. of plastic tubes perforated with pinprick holes placed at varying distances from each other. Compressor capacity was 100 gpm. Water depth: 50-ft. Ice thickness: 2-ft.

After 24-hrs., open ice-holes appeared and 24-hrs. later, holes of 30-ft. width formed, leaving a practically free lane of water, 30-ft. to 40-ft. wide. The plant operated for about 2-weeks with an open lane of 60-ft. to 65-ft. Atlas Copco Co. is the developer and further trials are being made by Vasteras on Lake Malaren, which hopes to link its port with the city of Sodertalje, on the Baltic Sea, some 60 miles away.

This experiment may merit serious attention this year due to the extreme difficulties which Scandinavia experienced last spring. Pulp shipments were unusually late in breaking through.

—Stockholm

SWEDEN EXPANSION – IS 47% GOAL POSSIBLE? . . . The Swedish pulp and wallboard industry is planning far-reaching extensions, according to a report published by the South Swedish Forest Industry Investigation Committee. By 1960 the volume of production of the pulp industry will, it is estimated, exceed that of 1954 by about 47%, or by about 1,700,000 tons, if the present plans are carried through. In the corresponding period the capacity of the wallboard industry should be increased by about 300,000 tons, or 80%.

The committee expects, however, that the realization of the plans in four to five years will meet with raw material problems. It considers it realistic to reckon upon taking about ten years to carry through present projects. On a longer view the committee judges the raw material situation to be favorable. New techniques are making it increasingly possible to utilize small timber, hard wood and sawmill waste. Use of pinewood for sulfite pulp is also stressed.

—Bombay

DEDICATION OF INDIA'S FIRST NEWSPRINT MILL . . . A formal dedication and opening of the first mill in India to manufacture newsprint took place recently at Nepanagar. The dedication was attended by many Indian dignitaries, including Prime Minister Nehru. This integrated newsprint mill actually started up in 1954 but only this year it began production using 100% local raw materials—bamboo and salai trees. It had been using imported sulfite.

Ebasco Services Inc. designed and supervised construction of the mill, built for the National Newsprint & Paper Company, Ltd., of Bombay. Nepanagar is near Chandni in the State of Madhya Pradesh, Central India. Its 226 in. Fourdrinier machine, built by Pusey & Jones Corp., Wilmington, Del., U.S.A, is the biggest in Asia.

The $12,000,000 project marks the first such enterprise on the mainland of Asia and the only modern one in the world designed and constructed to process newsprint for the first time commercially from bleached bamboo and salai pulps. Approximately 11,000 square miles of timberlands are available in Madhya Pradesh to provide a continuous supply of pulpwood.

Prime purposes of the new mill is to meet acute shortages of newsprint and to conserve dollar exchange in India. The project also represents one of India's first post-war industrial projects and is an essential part of the overall industrialization plans of that country.

Its anticipated annual output of about 35,000 tons of newsprint is expected to go a long way toward relieving the scarcity of that vital commodity in India.

The installation includes groundwood and chemical pulp and paper machine divisions, storage and shipping buildings, and work shops.

—Oslo, Norway

DESCRIPTION OF A RUSSIAN MILL . . . A U.S. government dispatch received here from Russia describes the Dserjinsij mill at Bolokhna, built in 1928 on the banks of the Volga near the town of Bolokhna. Timber from the forests, northward, are floated downriver in the summer.

Newsprint is the principal product and daily production of paper totals around 500 tons. Some of this paper is exported.

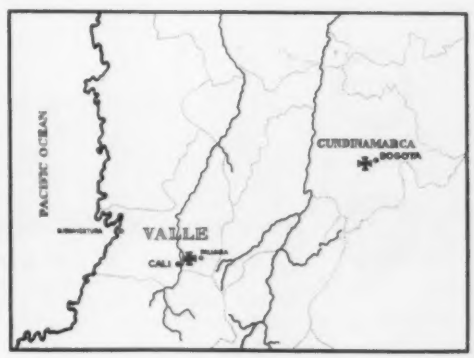
This mill has its own groundwood and pulp plant and facilities for producing alcohol, tannic acid and wallboard.

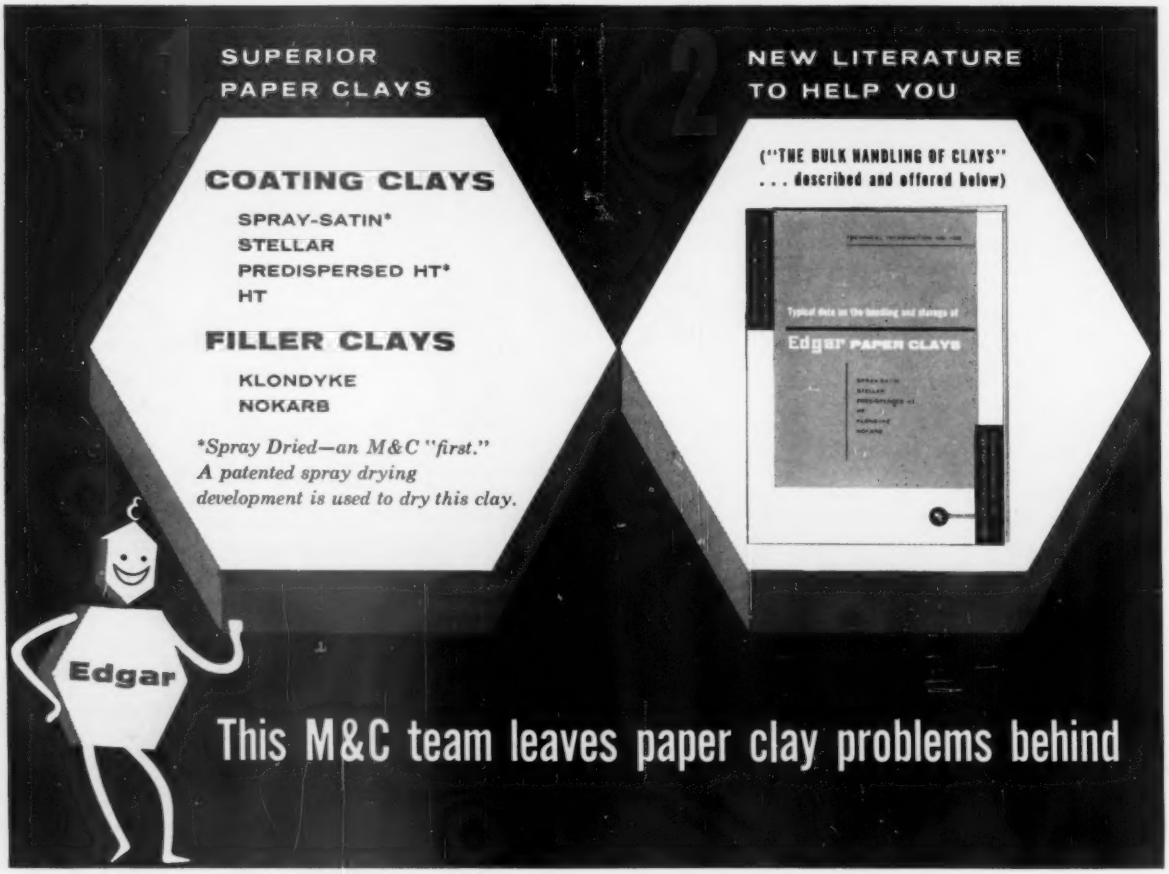
The large and efficient pulpwood cleaning facilities are of outdoor construction near the river, with only roofs over saws and barking drums. Timber length is about 18 ft. and is cut into 4-ft. lengths.

Two of the four newsprint machines are 207 in. wide, with speeds up to 1,200 fpm. This mill also has a wrapping paper machine.

Working areas are described as light and roomy and in good order. The impression was received that technical facilities are kept in good order and safety precautions are effective. Women work on all types of jobs, except as paper machine operators.

THREE NEW MILLS FOR COLOMBIA. Production of paper in Colombia will be doubled when three new mills, now in planning and construction stages, come into operation in mid-1958. At Cali is located Colombia's first paper mill, owned by Container Corp. of America. Two new mills, one for white writing and printing papers for Industria de Papel S.A., and one for papermaking pulp for Sociedad Colombiana Industrial S.A., will be built near Cali. At Bogota will be a newsprint mill, built by Empresa Nacionales de Publiciones.





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NEWS OF THIS "GROWTH INDUSTRY"

Plans for Starting Another Alaska Mill . . . By next spring Japanese owners of 5 1/4 billion bd. ft. of timber in Alaska expect to start construction of a $50,000,000 bleached pulp mill (300 tons a day) at Sitka. Japanese-owned Alaska Lumber & Pulp Co., Inc., has raised 50% of required funds in Tokyo; Dillon, Read & Co. is negotiating with American institutions for the rest . . .

All of a Sudden, Three Mills for the Rockies . . . Waldorf Paper Products of St. Paul already has broken ground and is starting to build its nodular kraft pulp mill at near Missoula, Mont. St. Regis contemplates a 400-ton mill near Libby, Mont., as soon as the Neils Lumber deal closes. J&J Rogers Co. is ready to start on its groundwood-newsprint mill in Colorado (round-up story in this issue) . . .

A Multi-Million Dollar Expansion for Ecusta . . . A No. 10 Fourdrinier machine, larger than the midget machines, familiar to visitors, now making cigaret and fine paper at Ecusta Paper Corp., will be installed there. It may produce new products. Olin Mathieson Chemical Corp., owners of Ecusta, okayed the project. New plant, new refiners, etc., included . . .

South's Newest Fiber Box Plant . . . Near the Jacksonville, Fla., mill of St. Regis, where world's biggest producing board machine soon starts up, Growers Container Corp. (Salinas, Calif.) has started up a new plant. On a 3-shift basis, it can make 2 1/2 million cartons a week. St. Regis owns an interest . . .

What's New at Ketchikan? . . . Production of Ketchikan Pulp has reached about 450 tons a day and more capacity is being added, a P&P editor who toured Alaska reports. A new type of stainless steel digester dome lining, held in place by vacuum, has been successfully introduced at Ketchikan. Two more will be installed in digester domes there. It works on principle of a bladder in a football (story in this issue) . . .

Business Panel Says 1957 Will be Good . . . In Chicago recently a panel of eight top business men, from Monsanto, Inland Steel, Montgomery Ward, Deere & Co., Sunbeam Corp., etc., were unanimous in predicting next year will be as good or better than 1956. Monsanto's Vice Pres. John Gillis said chemical sales will rise 5% to 6% . . .

What's Georgia-Pacific Doing Now? . . . That question is becoming axiomatic in talk of the future. Res. Mgr. Wm. J. Shelton says its 250-ton kraft mill at Toledo, Ore., will be completed next July. Contract was awarded Anderson-Westfall Co., Portland, Ore. Sandwell & Co. are engineers. With 12 billion ft. of timber in Oregon and California, long term plans are for mills at Eureka, Calif., and Coos Bay, Ore., too. Harvesting newly acquired Hammond Lumber timber will be boosted to 150 million ft. annually, giving young timber more chance, thus increasing annual growth materially . . .

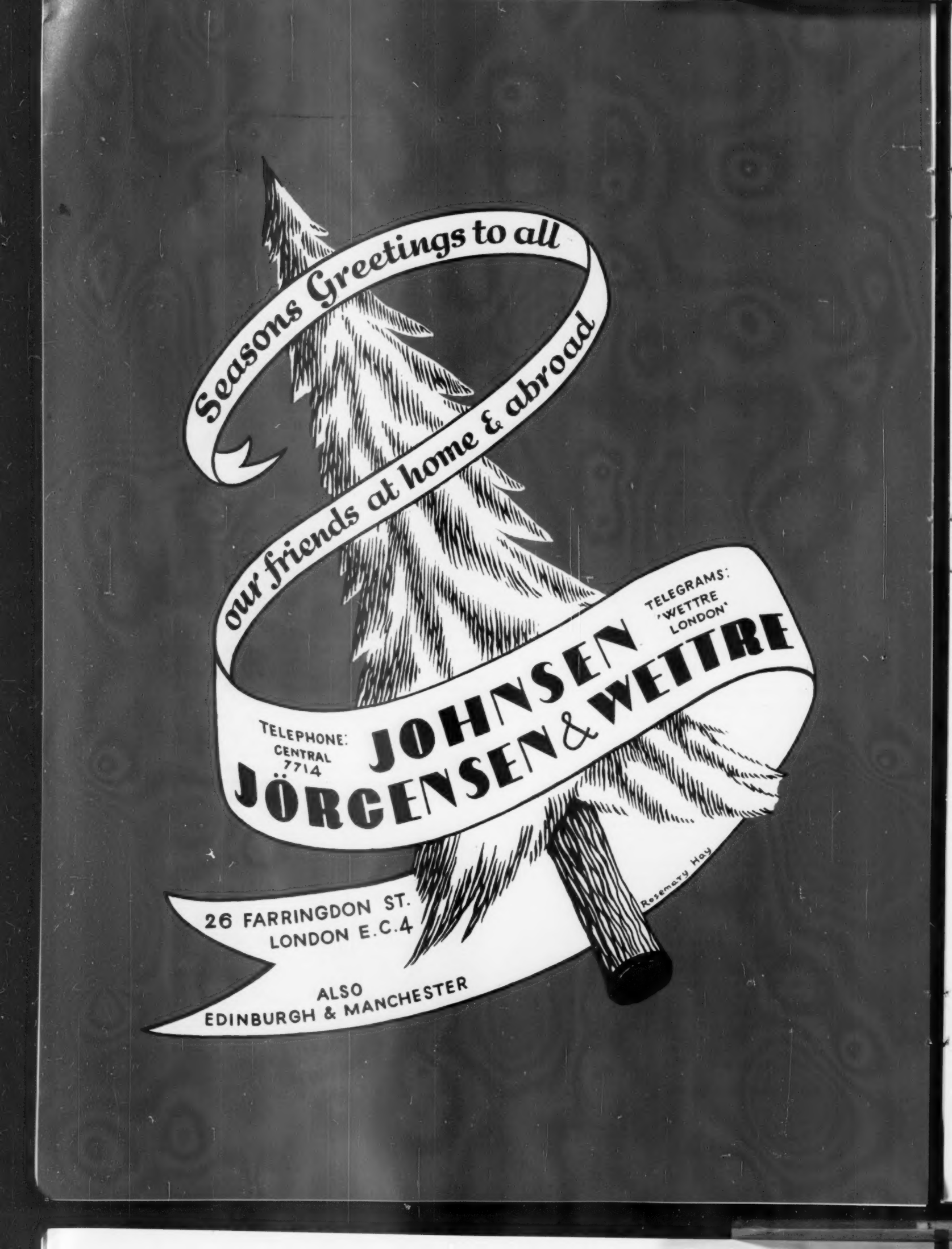
Outlook for Newsprint . . . "It looks like our North American newsprint mills will have to increase their capacity 17% (1.4 million tons) by 1960," says W. E. Soles, vice pres., Anglo-Canadian Paper Mills, Ltd. He adds "they can do it." He pointed out that future forecasts "allow only in part for the continuing imaginative development of the newsprint industry" . . .

Newsprint Keeps Breaking Records . . . Nearly every month a new one is made. Now the statistics have been released for September by the Newsprint Bureau, and these show that production reached 654,560 tons from North American mills, a volume surpassing any previous month in history. In U.S.A., 140,577 tons exceeded any previous month in history, even in the heydey of newsprint manufacture in this country. Likewise, Canada's 513,983 tons . . .

Another Record for Paper Production . . . As industry observers know by now, the paper and paperboard production of U.S.A. mills in 1956 will set another new high record. L. T. Stevenson of Tucker, Anthony & Co., former economist for APPA, already puts himself on record as saying the 1956 mark probably will be broken again in 1957. Population growth of about 3,000,000 a year, growth in per capita consumption and expenditures, he said, results in "a near geometic increase in volume of paper consumed . . .

"The Little Machine That Dared to Run Away from Home" . . . First reports and a sketch of this remarkable 91-in. single cylinder machine at Los Angeles (it will run economically in cities far away from wood supply—thus, its nickname), were published in PULP & PAPER. Three more of these Beloit-built "Little Machines" will be installed at Antioch; two making 20 tons a day of tissue; one, 50 tons of toweling. Another will be installed at Los Angeles. Pulp is pressure-sprayed on a cylinder machine, followed by drum dryers, creping and rewinding, and the exceptionally soft tissue is fed assembly-line fashion into automatic converting equipment. Watch for more "Little Ma-

NEW GROWERS CONTAINER PLANT STARTS UP in Jacksonville, Fla. Capable of producing some 4 million feet of fibre box and corrugated linerboard at its start-up, this bright new mill, snapped by PULP & PAPER's Southern Editor, is expected to be producing about 7 million feet by Jan. 1.


Seasons Greetings to all
our friends at home & abroad
TELEGRAMS:
'WETTRE
LONDON'
TELEPHONE:
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7714
JOHNSEN
JÖRGENSEN & WETTRE
Rosemary Hay
26 FARRINGDON ST.
LONDON E.C.4
ALSO
EDINBURGH & MANCHESTER

chines"—in cities far removed from timber or pulp supply . . .

Scott Sets New Record in Sales . . . Total net sales for Scott Paper Co. were $200,089,016 for the first nine months of 1956, some $15,000,000 above the corresponding period in 1955. Pulp supply expansion at the Everett, Wash., operations, where output already exceeds 700 tons a day, is a major item for Scott's future growth . . .

A Prediction Coming True . . . Back in the Sept. issue, PULP & PAPER said "watch Antioch, Calif." Crown Zellerbach eventually will make it "another Camas" (Camas, Wash., is "the biggest specialty mill in the world"—CZ's most diversified operation). Hardly has the new 400-ton paper mill at Antioch started up, with a multiwall bag plant alongside—already CZ announces plans for an $8,000,000 converting plant at Antioch to make household tissue and toweling, napkins, bags and specialty products. Also, under construction, a $3,000,000 plant to make corrugating boxes . . .

More Groundwood Paper for Printing . . . That's the reason for St. Regis expansion at Harrisville, N.Y. The groundwill mill will be expanded, a bleach plant added, a Centri-Cleaner system will be installed, more uncoated paper will be made . . .

Continental and Gair Merge . . . Continental Can and Robert Gair Co. stockholders approved the merger of these two companies and George E. Dyke, Raymond F. DeVoe, Robert L. Fitts and Parker Newhall join Continental's board . . .

Another Semi-Chemical Mill . . . Construction of a $3,000,000 semi-chemical pulp mill at Brooklyn, Hants County, Nova Scotia, owned by Mindland Pulp & Paper Mills, Ltd., will be started almost immediately. Initial plans call for 50-to-a-day production with ultimate expansion to 200 tons. The mill will produce corrugated medium . . .

"Deposit" Toward Ontario Mill . . . Anglo-Newfoundland Development Co., headed by Elliott M. Little, has deposited $250,000 with the Ontario government as a guarantee of performance in carrying out its proposed pulp and paper mill near Sioux Lookout, Ont., starting no later than May 1959.

Champion-International Adds "Super" . . . Champion-International Paper Co. is installing a new 128-in. Rice Barton-Eck supercalender capable of handling full width rolls from No. 8 machine at a higher speed than any present calenders in the Massachusetts mill. It will be a giant two-story high 12-stack roll, operating at 1,500 fpm . . .

Bergstrom Paper Co. and Whale Safety Paper Co. Merge . . . Bergstrom Paper Co. of Neenah, Wis., has merged with Whale Safety Paper Co., a neighboring specialty firm which was founded in 1946. It makes a safety paper which indicates any alteration by erasure or eradication. A fluorescent design is destroyed and words "fraud" or "altered" are exposed. Its products have 170 distributors throughout the world . . .

Saskatchewan's First Pulp Mill . . . Construction of Waskesiu Forest Products, Ltd. is to start early in 1957, says Robert G. Campbell, Vancouver construction man who heads the syndicate back of the proposed $60,000,000 venture . . .

Third Mill in "Newfie" . . . Tentative plans for a third large newsprint mill on Newfoundland announced by Premier Joseph Smallwood have stirred speculation as to the availability of sufficient pulpwood to serve a mill in addition to operations of Bowater's Newfoundland and Anglo-Newfoundland Development Co. A government commission says that there is adequate timber for a two-machine mill of 150,000 tons annual capacity. Another survey is now being undertaken by the two operating companies in cooperation with the government . . .

Plans Bleached Pulp Mill . . . Abitca Lumber & Timber Co. of Montreal plans to proceed with conversion of its mill at St. Malo, Que., for the production of paper and molded pulp products at a cost of about $500,000. A new wholly owned subsidiary, St. Malo Pulp & Paper Corp., has purchased the St. Malo plant which will also manufacture seamless bottom, siftless bags . . .

More Talk of Canadian Mills . . . Spokesmen for the governments of Saskatchewan and British Columbia have been discussing the probability of new pulp mills entering their province. In Manitoba, International Nickel Co. is reported interested in a major power development in the Churchill area, and surplus power would be available for a pulp mill. In Northern Saskatchewan, a California group is reported to have obtained an option on 12,000 acres of timberland in the Meadow-Dore lake area with a view to building a kraft mill . . .

Trend toward Integration . . . In a state-by-state enumeration, APPA shows that the daily capacity of integrated mills rose from 18,584 tons in 1930 to 62,377 tons in 1955, an increase of 235%, while the daily capacity of non-integrated mills rose from 29,598 tons to 38,707, an increase of only 31% for the same span of years . . .

New Container Plant . . . Container Corp. of America will build a new corrugated container plant on a 25-acre site at Dolton, Ill. The plant will be in operation by June 1957.

Riegel Paper Corp. Plans Merger . . . with Norman Lumber Co., Norman, N.C. Acquired: 25,000 acres of timberland and a sawmill. Riegel already has 185,000 acres of timber.

IN THE PARLANCE OF THE INVESTMENT WORLD, "Growth Industry" is a term used to differentiate certain industries from those which, by their very nature, are necessarily static, others that are speculative, etc. It has only been in recent years that most of the investment world has recognized pulp and paper as a genuine "Growth Industry." Its planning is longterm, its markets and uses are basic, they keep increasing, and it is the only major industry based upon a renewable resource—trees. Depressions may come and go—they will never wipe out trees.

SULPHUR

helps to create headline products

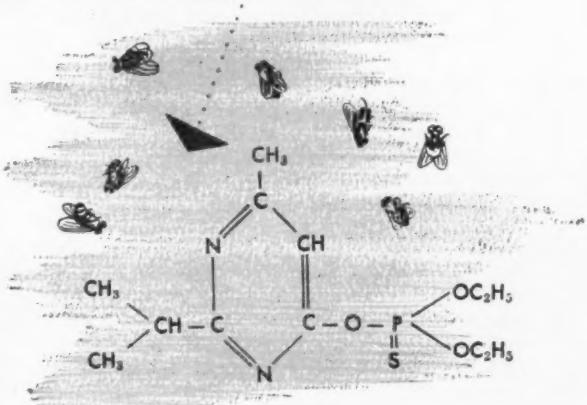
DIAZINON*

What a 'killer' this complex chemical is turning out to be! And quite impartial as to its victims: — houseflies, barnflies, fruitflies, aphids, mites, ants, beetles, chinch bugs, roaches, and many other pests that bother man and beast. It kills them dead!

As with the former chemicals which made such notable headway in man's fight to subdue these destructive pests, Sulphur is very much in the picture—here is one of the many variations of the benzene ring . . . the Diazinon Formula. That letter "S" tied in with the letter "P" discloses the all-important thiophosphate.

Sulphur, often called one of the Four Pillars of the Processing Industry, is benefiting mankind in many ways. None is more important than that of controlling crop-destroying pests.

**A product of the Geigy Chemical Corporation.*



Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N.Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- Newgulf, Texas
- Moss Bluff, Texas
- Spindletop, Texas
- Worland, Wyoming

5 Industries... Well-Known Companies

... typical of more than 100 companies for whom Grinnell is currently fabricating

POWER AND PROCESS PIPING

CHEMICALS
NATIONAL ANILINE DIVISION OF ALLIED CHEMICAL & DYE CORP., Hopewell, Va.

PULP & PAPER
UNION BAG & PAPER CORP., Savannah, Ga.

POWER
PENNSYLVANIA POWER & LIGHT COMPANY, Allentown, Pa.

BEVERAGE
CARLING BREWING COMPANY, Natick, Mass.

OIL REFINING
TIDEWATER OIL COMPANY, Delaware City, Del.

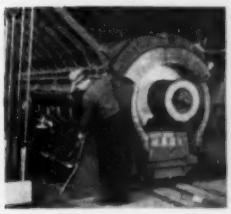
These successful companies, leaders in their respective fields, are building new facilities right now. The power and process piping needed in this construction is being fabricated in Grinnell shops.

In fact, at this time — or at any given time, more than one hundred similar-type orders for prefabricated piping are being worked on by Grinnell. Why this marked preference by so many companies for Grinnell?

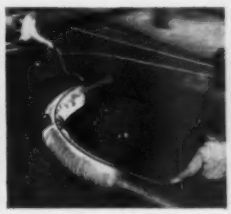
Because piping fabricated in Grinnell shops is done under ideal conditions, with modern equipment, by personnel qualified for each class of work. Included in the price (which is determined in advance) are such items of expense as: interpretive engineering, shop sketches and planning, procurement of materials, power services, expendable tools and supplies. All piping is rigidly inspected and tested to comply exactly with customer specifications and applicable codes. Consult Grinnell on your next piping job.

ATTENTION: *A 30-minute color sound film showing the quality and economy of Grinnell Shop Fabrication of all classes of piping is available for group showings.*

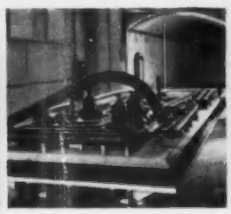
GRINNELL
WHENEVER PIPING IS INVOLVED



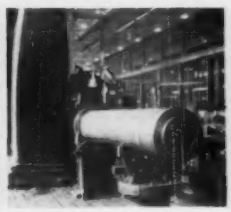
Pipe being heated to exact temperature required for proper bending



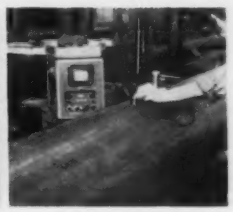
Skilled team completes bend in six minutes with pipe close to 2000°F



Fabricated piping, bending operation completed, enters stress-relieving furnace



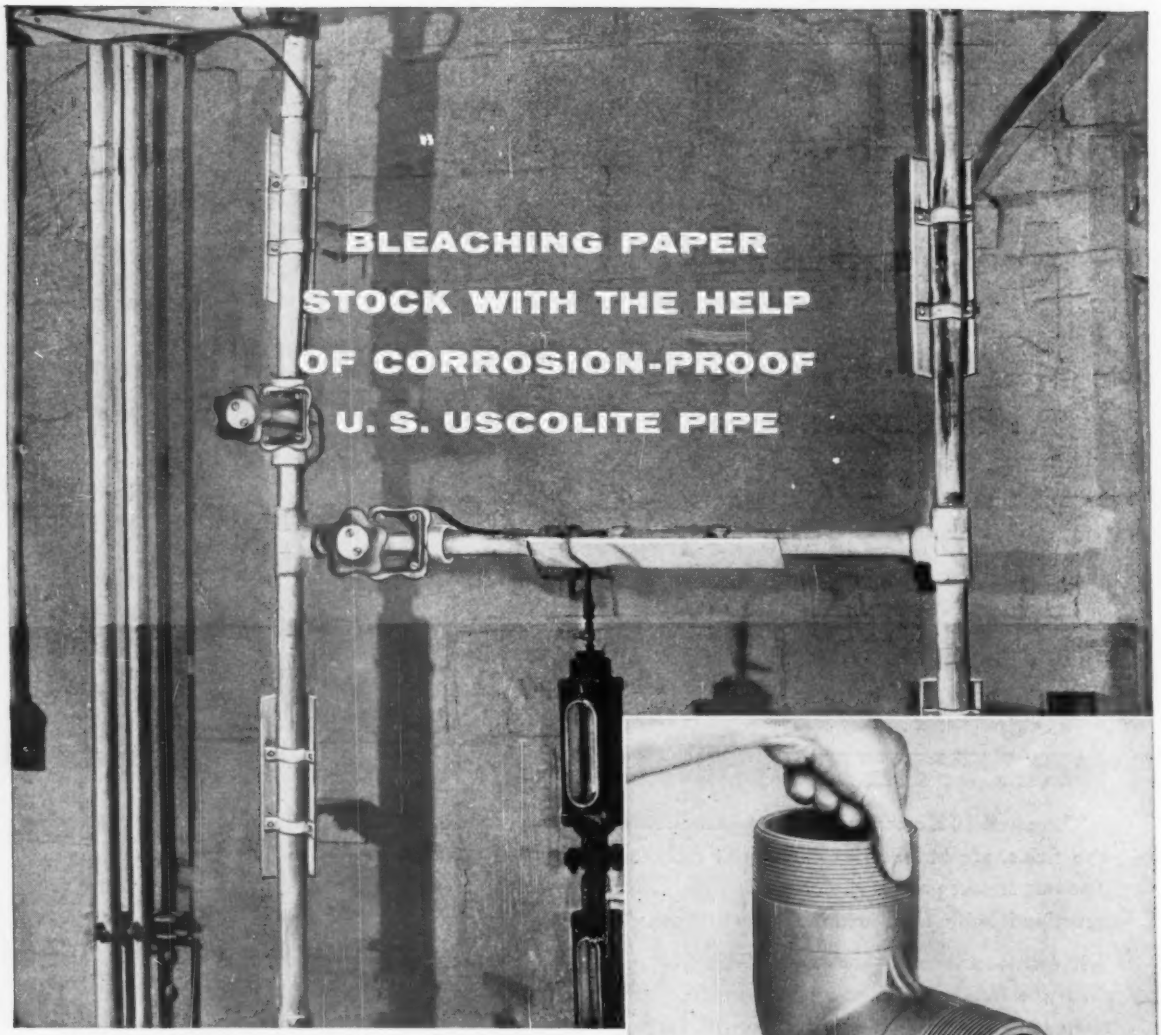
Heavy wall pipe being machined to the proper welding bevel on a post mill



Ultrasonic testing of a weld on heavy wall pipe

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems



Milk of lime rotameter, used in the control of the pH of the stock in a double-shaft mixer. The piping is U. S. Uscolite with Uscolite (Hills-McCanna) valves.

The paper mill, located in Pennsylvania, selected U. S. Uscolite® plastic pipe because it's immune to the corrosive chemicals used in the bleaching process, and requires *no upkeep*. The piping previously used just couldn't stand the gaff.

Made by United States Rubber Company, Uscolite is an extremely tough but lightweight thermoplastic pipe. It imparts no odor, taste or discoloration. It is threaded and assembled with ordinary piping tools—*without* special preparation. Uscolite is in use in thousands of installations in every industry where constant control of chemicals, acids or corrosion is a problem.

Uscolite pipe and fittings are made in the broadest and largest line of stock sizes on the market. Sizes run from ½" to 6".

For replacement or completely new piping, get in touch with any of our selected distributors or any of the 28 "U.S." District Sales Offices or write us at Rockefeller Center, New York 20, N. Y. Immediate delivery of standard sizes and threaded fittings. The Hills-McCanna Uscolite valve is available for your piping assembly.

Watch NCAA football, Saturday afternoons, NBC-TV

Mechanical Goods Division

United States Rubber

AT MANY WELL KNOWN MILLS

Venturi Evaporator-Scrubbers

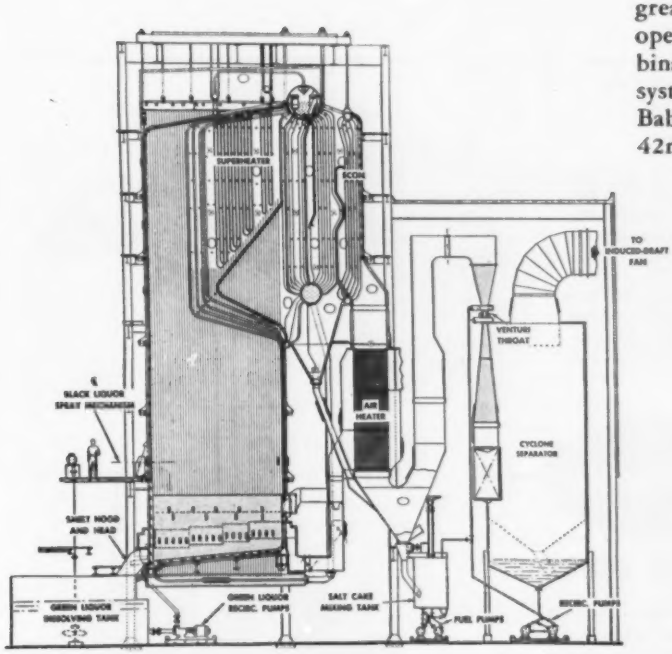
IN B&W RECOVERY SYSTEMS

assure greater operating efficiency

A notable advance in black-liquor recovery is illustrated by the B&W System shown, which features the Venturi Evaporator-Scrubber, and is typical of installations in operation at the Thilmany, D. M. Bare, Western Kraft, Potlatch Forests, Southern Kraft and other pulp and paper plants.

The B&W Venturi Evaporator-Scrubber combines in one unit the concentration of black-liquor with the collection of salt cake fume. Its complete dependability and unusually high efficiency have been thoroughly tested in service for more than three years.

Companies have chosen B&W Recovery Units, equipped with Venturi Evaporator-Scrubbers, for greater efficiency in their black-liquor recovery operations. Whether your mill requires this combination or another, B&W can provide the recovery system that *best* meets your requirements. The Babcock & Wilcox Co., Boiler Division, 161 East 42nd Street, New York 17, N. Y.



VENTURI EVAPORATOR - SCRUBBER LICENSED FROM PEASE, ANTHONY EQUIPMENT CO.

VENTURI-EQUIPPED
B&W Recovery Units
(in operation and on order)

Thilmany Pulp & Paper	Northwest Paper
D. M. Bare Paper	Mead Corp. (Lynchburg)
Western Kraft	Gulf States Paper
Potlatch Forests	National Container
Watervliet Paper	Buckeye Cellulose

Southern Kraft Division
International Paper Co.—4 Plants

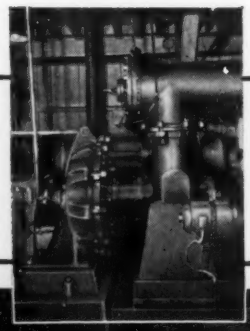
ADVANTAGES of the B&W Venturi Evaporator-Scrubber

- Simple to operate
- Low in First Cost
- Increases Overall Thermal Efficiency
- Reduces Maintenance Requirements
- Continuous, High, Fume Collection Efficiency
- Minimum Space Requirement
- Reduces Multiple-Effect Evaporator Load

BABCOCK & WILCOX
BOILER DIVISION

P-795

For Continuous



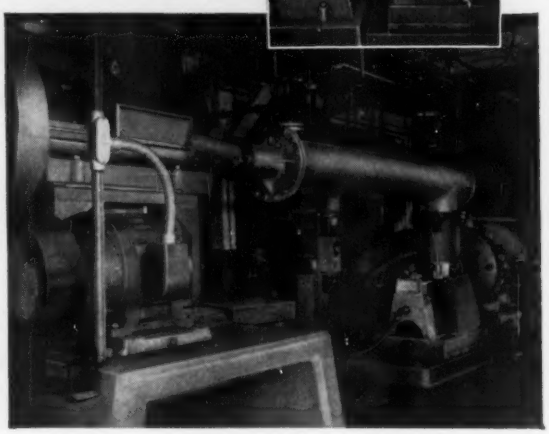
Pulping

THE ASPLUND DEFIBRATOR

For continuous pulping of wood chips or other cellulose material for hard board, insulating board, roofing and flooring felts, and corrugating board.

In the Defibrator process, the chips are uniformly pressure-cooked as they are conveyed through the digester tube where time, temperature, and pressure are controlled. Chips are then easily defibrated and passed through a blow valve to a cyclone where pulp is pumped to secondary refining or to a stock chest.

Yield is high, and power, operating, and maintenance costs are low. Capacity from 50 to 250 tons per day b.d. New 42" Defibrator now available.

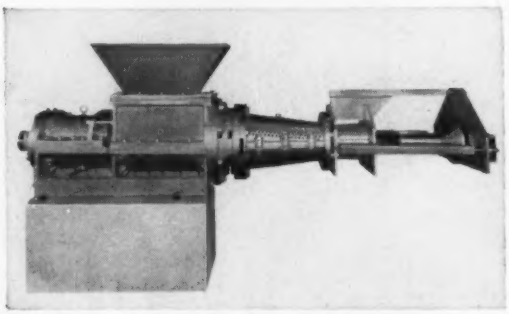


Dewatering

THE DEFIBRATOR BARK PRESS

Developed for continuous dewatering of bark for use as fuel. The Defibrator screw feed principle is used to reduce the moisture content of wet bark to 55% or below. In this state, bark burns readily with about half the fuel value of coal.

In installations now in operation, the procesing capacity is approximately 5 tons per hour (on a b.d. basis) and power consumption at this capacity runs between 45 and 50 H.P. Heavy duty construction throughout. Specifications and detailed information on request.

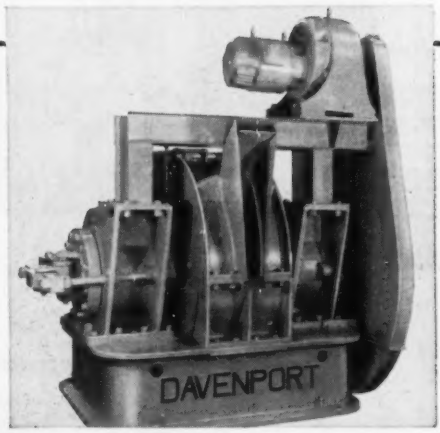


Extraction

THE DAVENPORT CONTINUOUS PRESS

For extraction of excess moisture from semi-solid materials—especially efficient for dewatering pulp and other fibrous materials, where fibers act as a filtering medium, aiding the screen plates in preventing loss of fines in the liquid which is forced out.

As these presses are continuous, they require little attention from the operator except for starting and stopping, with considerable saving in manpower. The process is completely mechanical, with low power consumption and high capacity. And because of its extremely rugged construction, maintenance costs are exceptionally low.

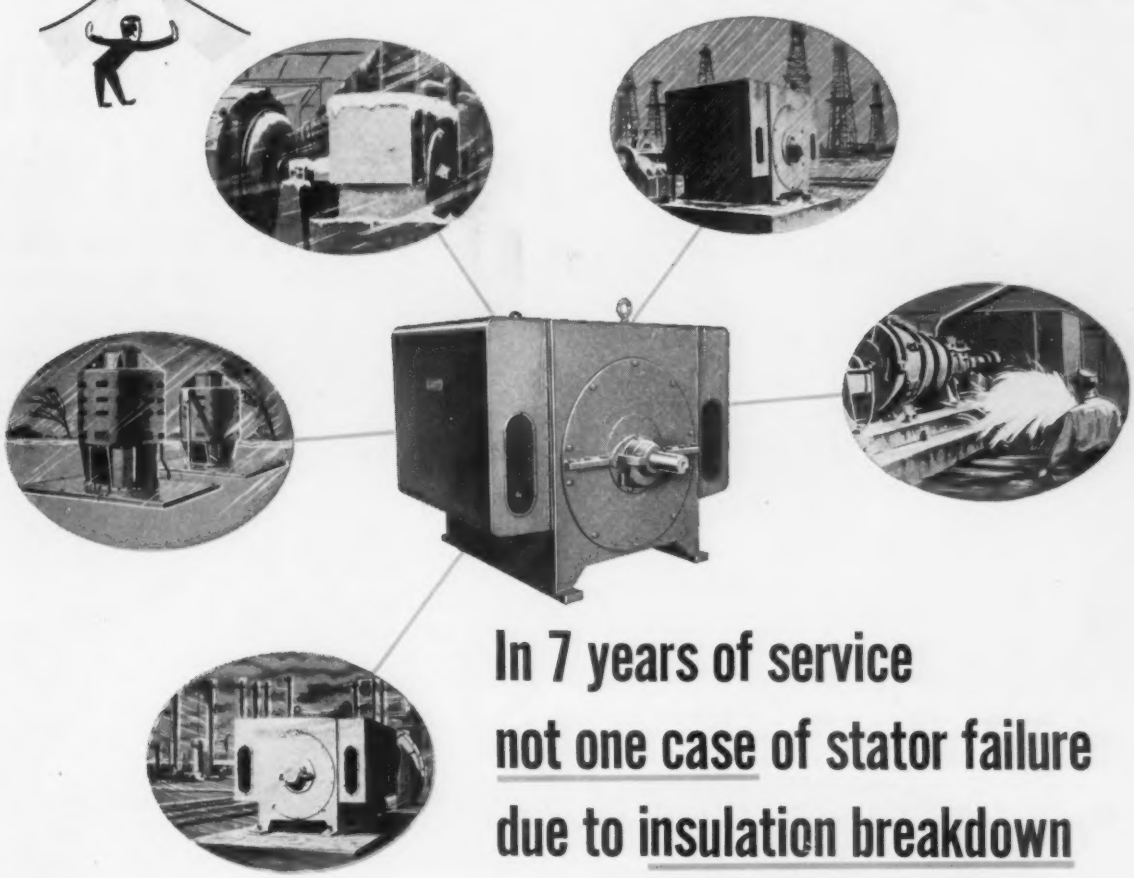


AMERICAN DEFIBRATOR, INC.

CHRYSLER BUILDING
NEW YORK 17, N. Y.

West Coast: A. H. Lundberg
Orpheum Building, Seattle, Wash.

LOOK BEHIND THE "INSULATION CURTAIN" BEFORE YOU SELECT A LARGE MOTOR



In 7 years of service not one case of stator failure due to insulation breakdown

Merchandising alone doesn't "make" a motor. Fancy names, laboratory tests and "miracle formulas" don't mean a thing until actual, on-the-job service records back them up. Elliott insulation in large, squirrel-cage induction motors has proved itself. Since 1948, when Elliott weather-protected motors first went on the job, *not one* motor has failed because of insulation troubles. This is the record chalked up by more than 1,400,000 hp of motors in service—500,000 hp of them in rigorous outdoor service operating in extremes of dampness, rain, snow, sleet, hurricanes, tornadoes, oil fumes, salt spray, and many other unusual conditions. What better proof of motor insulation dependability can you ask for?

This outstanding insulation system has now been extended to all induction or synchronous motors for pulp or paper mill service. For details see your Elliott field engineer or write to the Elliott Company, Ridgway Division, Ridgway, Pa.

MODERN ELLIOTT COIL INSULATION . . . and winding treatment combines the latest in materials with the know-how and thoroughness of application to make them successful. Some highlights:

- Ground insulation combining the ageless and high temperature resisting characteristics of mica with the tough, flexible support of Mylar* backing.
- A permanently elastic insulating varnish.
- Vacuum-pressure impregnation for sure, complete penetration. (Completely wound stator is finally sealed by immersion in a specially suited insulating varnish.) Bulletin PB 1400-4 tells the whole story. Write for a copy.

*Dupont Trademark

R6-8A

ELLIOTT Company

Elliott large motor insulation is "field-proven"

Take a Tip

On EMERSON Stainless Steel Jackets

When it comes to maintenance you can afford only the best. With the EMERSON Stainless Steel Jacket installed on your worn, corroded Jordan plug, you get:

- Lower labor and maintenance costs
- Freedom from corrosion
- Longer plug and filling life
- Steady stock production

BOLTON

TRADE

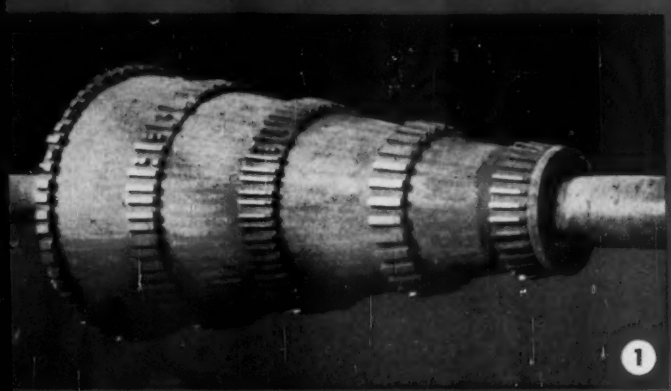
John W. BOLTON & Sons, Inc.
Lawrence,

Available in Canada through our Canadian representatives — Pulp & Paper Mill Accessories, Ltd., Montreal, P.Q.

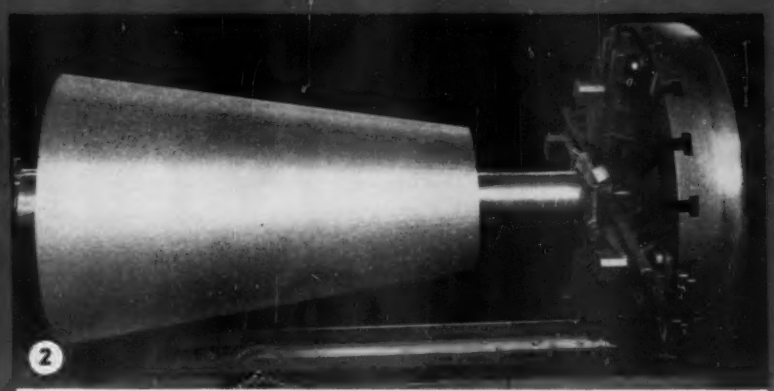
from The Papermaker

EMERSON, and only EMERSON, patented Stainless Steel Jackets are designed for any Jordan plug — are designed for any size, interchangeable, BOLTON Wedgeless Plug Knives to meet your production requirements. To have these advantages here's all you do:

Remove your old plug and shaft intact (don't spend a cent dis-assembling plug from shaft) and ship.



Typical worn, corroded plug during processing to restore its usefulness with a stainless jacket.



Mounted stainless jacket being precision machined prior to slotting.

Patented jacket construction for maximum strength and service. Knives of any metal or size can be interchanged.

Your old plug ❶ is turned down and a heavy stainless jacket is applied by a patented process. It is precision machined ❷ then milled to form dove-tailed wedgeless slots for the knives. New shaft sleeves, stainless steel end plates and stainless steel end rings are mounted. The plug is tested for perfect balance and the shaft indicated for straightness.

With woods and knives installed on the stainless jacket the transformation is complete. Your plug becomes a new solid unit of operating strength ❸ completely protected against corrosive liquids and equipped with performance-proven **BOLTON Wedgeless Fillings** for long, trouble-free, rugged service.

Want to learn more about **EMERSON Stainless Steel Jackets?** *Clip and send this coupon now!*

EMERSON

MARK

EMERSON MANUFACTURING DIVISION
Massachusetts, U.S.A.

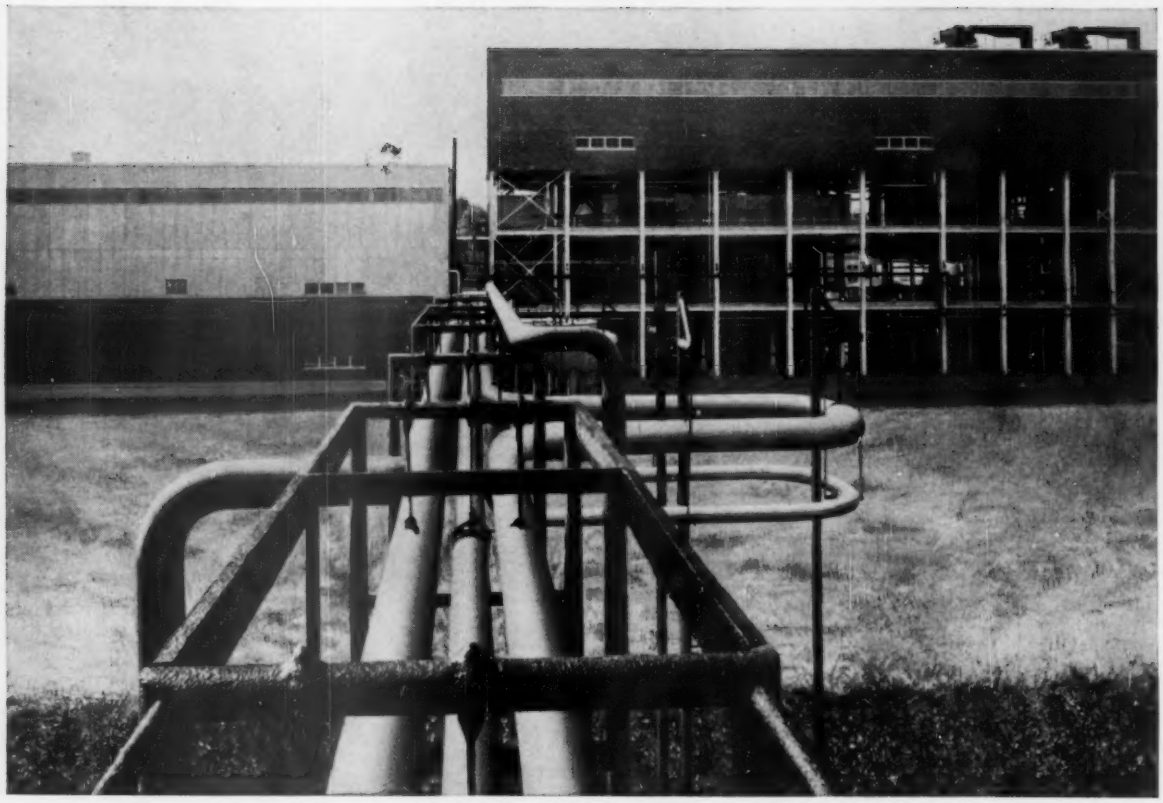
John W. BOLTON & Sons, Inc.
EMERSON MANUFACTURING DIVISION
Lawrence, Massachusetts

☐ *Send me additional literature.*
☐ *Have a Bolton-Emerson Paper Mill Representative call.*

Your Name_____

Mill_____

Address_____



Unibestos insulates vital lines carrying steam, condensate and black liquor across the field to the new Crossett mill. J. E. Sirrine Co. of Greenville, S. C., designed the new mill.

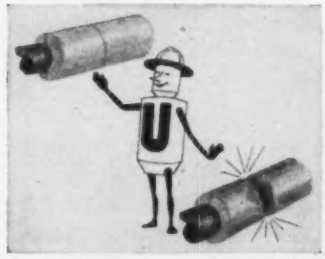
Crossett cuts pipe insulation costs with single-layer Unibestos

Steam, hot water, condensate, black liquor—these are the lines that require full protection against heat loss. More and more mills like Crossett find Unibestos seals in more heat all along the line —including the hard-to-insulate joints and fittings.

Made with the strong, interlacing fibers of Amosite asbestos, Unibestos provides better than double-layer protection with just *single-layer construction.*

And it's single-layer application that cuts installation costs by a wide margin. For an insulation so easy to cut and so simple to apply, Unibestos has remarkable, long-lasting strength. Wherever used, Unibestos shrinks less...resists more moisture, acid and chemical fumes... withstands more shock and vibration.

Positive protection...unmatched durability. It's the Unibestos combination for today's most efficient and economical pipe insulation. Unibestos® is available in sectional form through 44" O.D.



Joe Besto says:

***No* shrinkage up to 750°F! Negligible shrinkage beyond that. Unibestos keeps heat in...doesn't shrink to expose the pipe to a BIG heat loss.**

Write for the new 40-page Unibestos catalog

UNARCO

UNION ASBESTOS & RUBBER COMPANY

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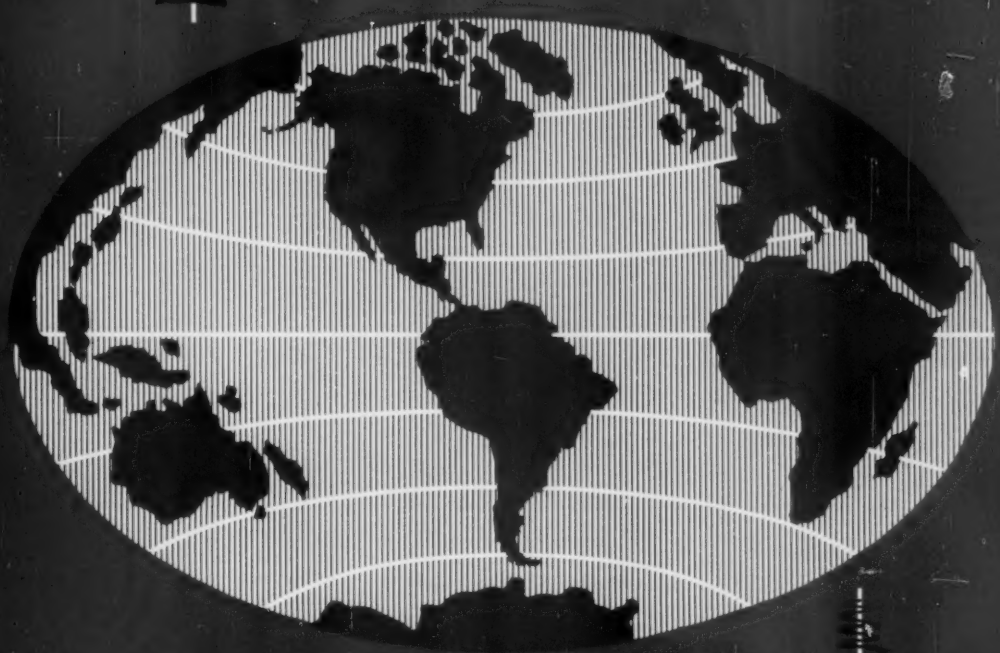
WOOD PULP
PAPER



Offices and representatives in 60 cities in the United States, Europe, Latin America, Africa, and Asia

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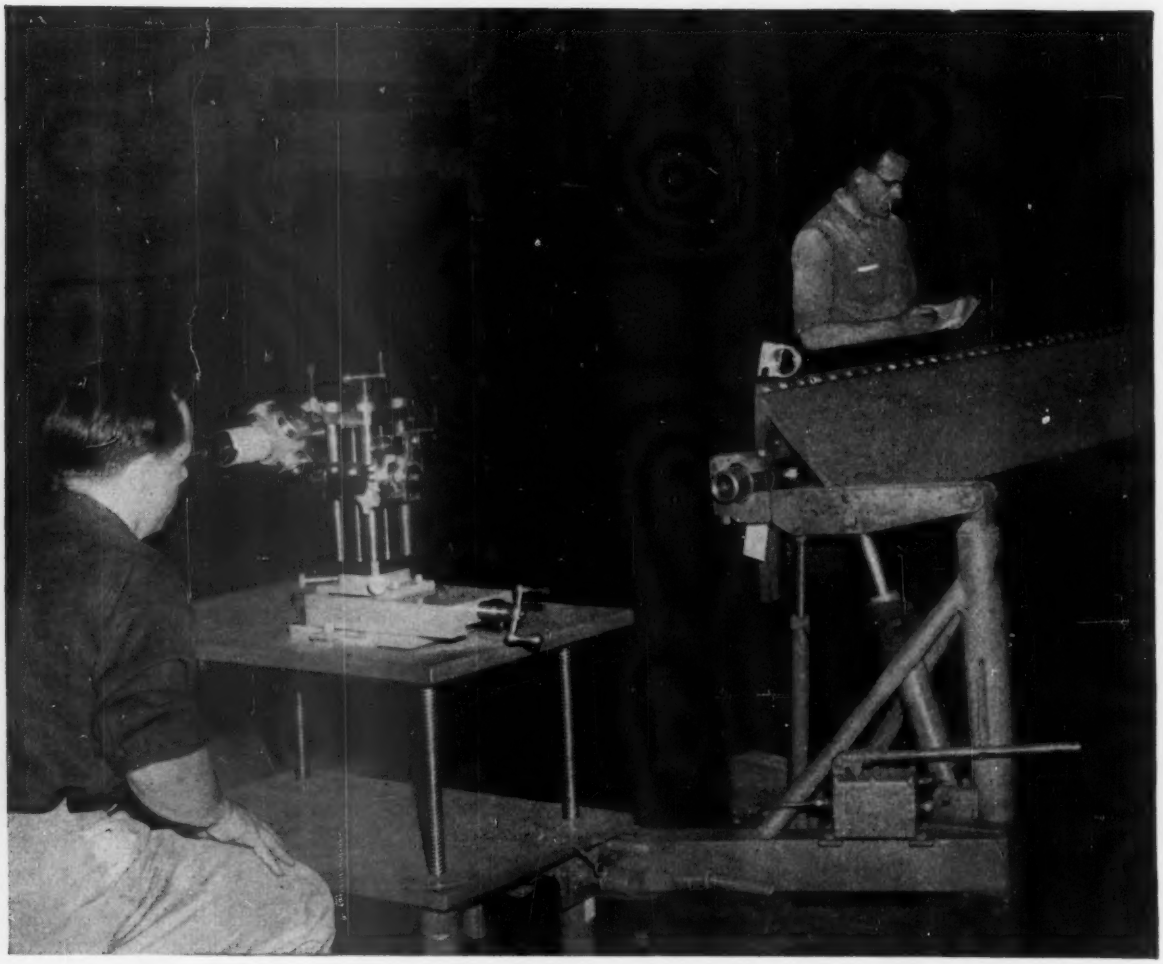


Optical test. With doctor in working position, inspector at Lodding Engineering Corporation checks "K" Monel blade for straightness. "K" Monel is extra strong, extra hard. It offers high resistance to wear and corrosion . . . and does not feather-edge.

Blades made of "K" Monel...*

pass all on-the-job tests, too!

Frequent changes of doctor blades — you know what they do to production schedules and costs!

Why let them — when LODDING ENGINEERING CORPORATION makes blades of corrosion-resisting "K" Monel age-hardenable nickel-copper alloy?

"K" Monel blades run two to five hours between grinds, depending on the paper you're making. Their surfaces stay smooth . . . wear uniformly. Your rolls are left clean and unscored. There's no fibre buildup. No scratching. And they last lots longer than most blades.

LODDING recommends "K" Monel. For all types of creping service. For nearly all metal rolls on your paper machines. *See how "K" Monel helps to keep your production up . . . and to hold your costs down.*

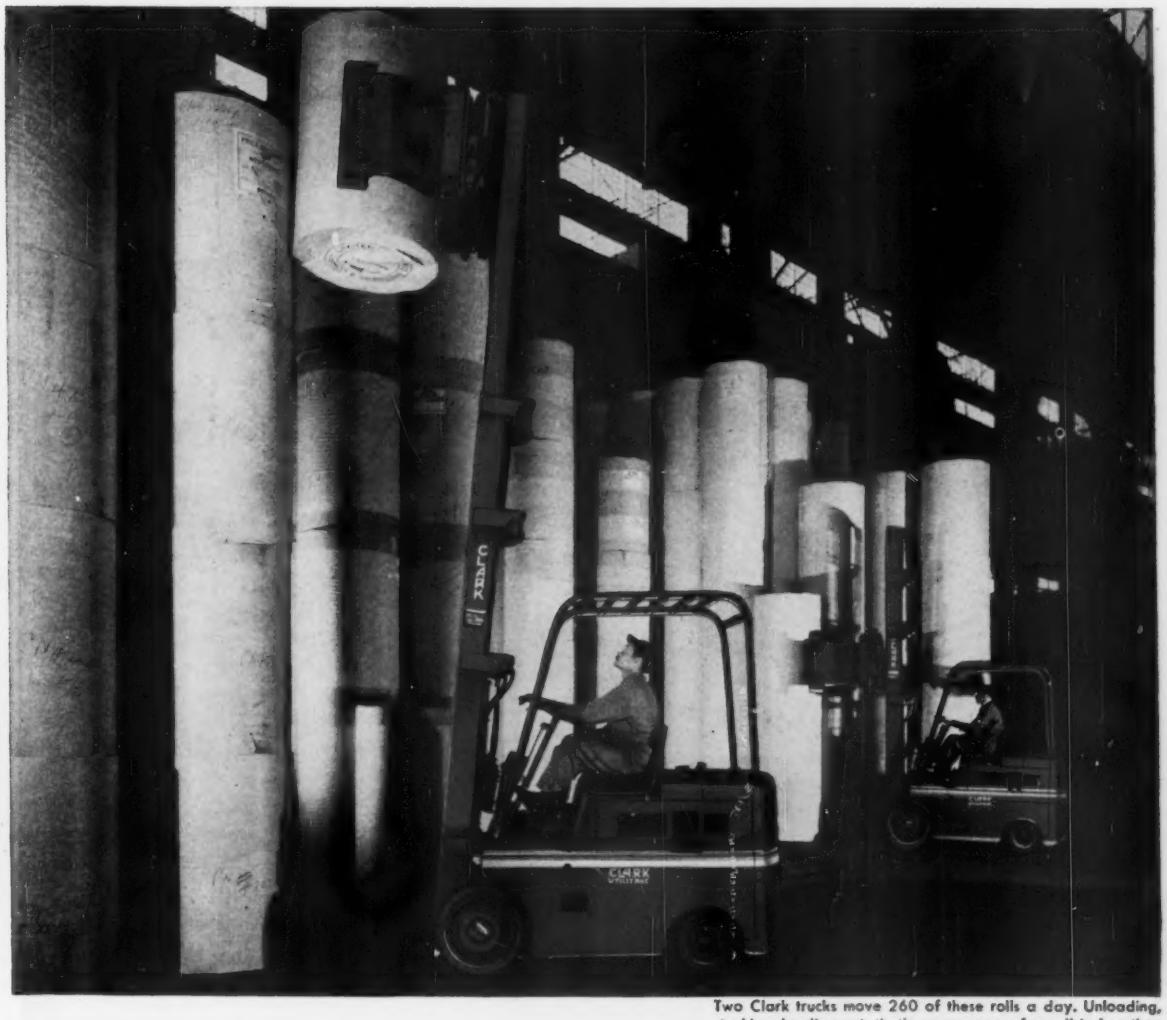
LODDING ENGINEERING CORPORATION, makers of quality blades, can supply your needs for all types of "K" Monel doctors. Write Lodding — Dept. K; Worcester, Mass. — for more information. And write us for help in picking the right metal for any corrosive job in your mill!

*Reg. U. S. Pat. Off.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N.Y.

INCO TRADE MARK

"K" Monel
...for longer life

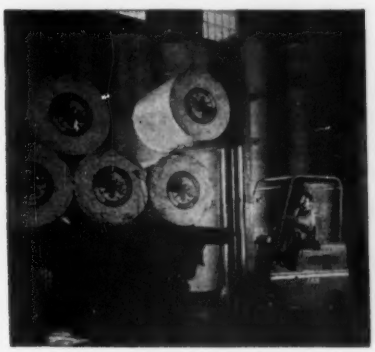


Two Clark trucks move 260 of these rolls a day. Unloading, stacking, loading out; that's an average of a roll in less than four minutes during every 8-hour shift.

"It's the same job . . .

but now we save 'Parade' thousands of dollars"

General Public Warehouse Co., Inc., Philadelphia, Pa., uses Clark trucks to move and store almost anything—automobiles, cases of food, carpeting, cement, perishables. Then there's the "paper job."



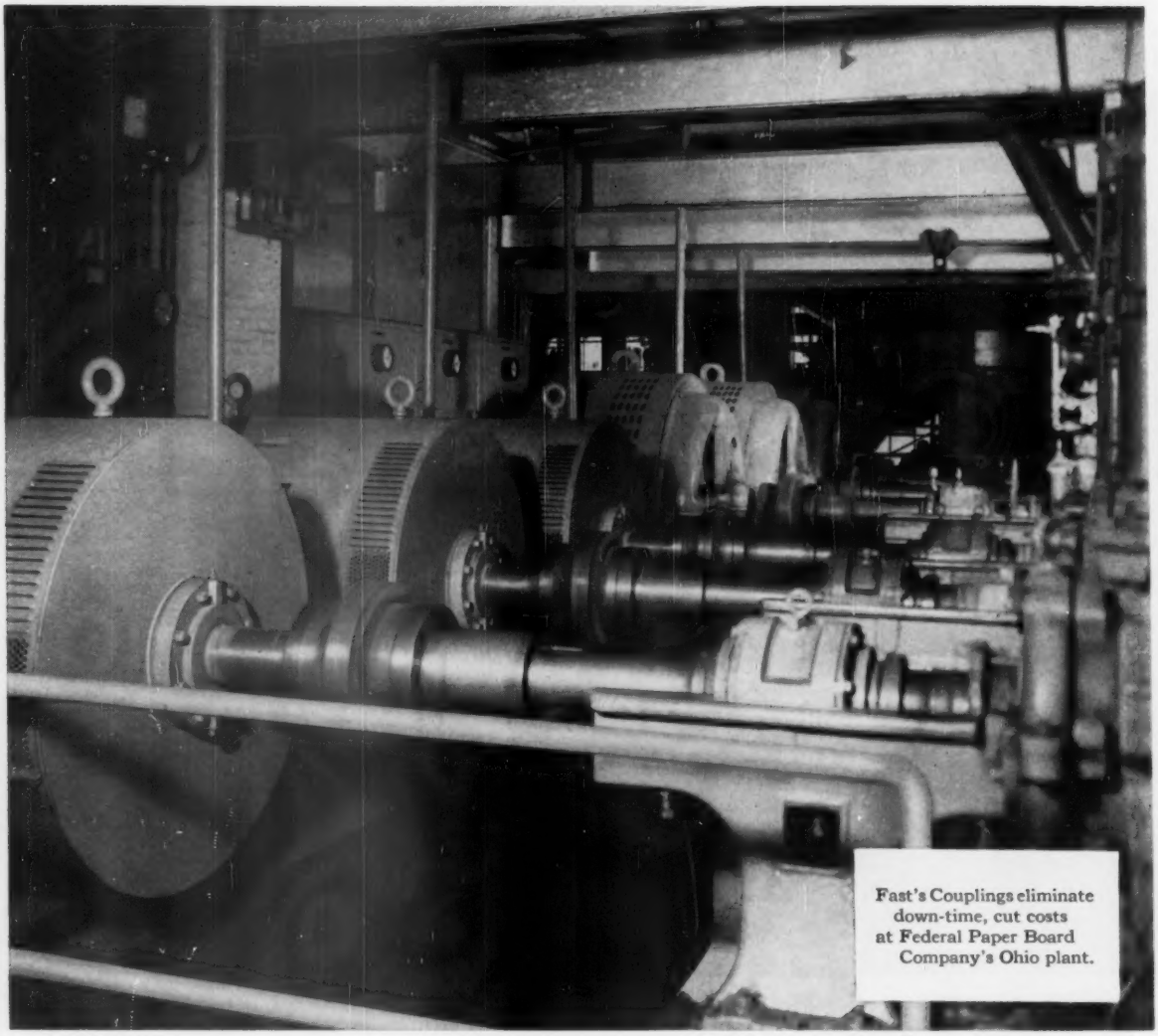
Two Clark trucks, equipped with roll clamps, move 260 tons of paper rolls a day for "Parade," the Sunday magazine supplement. Roll clamps eliminate core damage. Vertical stacking, instead of pyramiding, saves 25 per cent in warehouse space, 20 per cent in damaged rolls.

The result? General Public Warehouse has passed on annual savings of thousands of dollars to its good customer, "Parade"—almost the full purchase price of a new Clark truck.

You may think you're doing the best handling job possible already. Why not make sure by calling *your* Clark dealer. He's as near as the "Yellow Pages" in your 'phone book, under "Trucks, Industrial."

CLARK® EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 201 Michigan
A BETTER BUY WITH LOCAL SUPPLY—*Genuine Clark Parts*



Fast's Couplings eliminate down-time, cut costs at Federal Paper Board Company's Ohio plant.

Federal Paper Board Company has specified Fast's Couplings since 1944

In 1944, the Steubenville, Ohio, Mill of Federal Paper Board Company installed three #5 Jordan-type Fast's Couplings to obtain maximum power transmission with minimum down-time. In 1946, this firm installed three additional #5 Fast's Couplings. Again in 1950, Federal Paper Board Company specified Fast's Couplings, three #4½ Jordans.

Recently, Mr. R. J. Quinn, master mechanic of this plant, stated: "Not one of these Fast's Couplings has given us any trouble whatever. They're absolutely essential to our plant production. If these Fast's Couplings failed, our plant would be forced to shut down." Mr. Quinn uses many other standard Fast's Couplings throughout the plant, and is completely sold on them.

There's a Fast's Coupling for every power transmission application. Remember: *Fast's Couplings usually outlast the equipment they connect.* For catalog write to: KOPPERS COMPANY, INC., Fast's Coupling Dept., Metal Products Division, 2712 Scott Street, Baltimore 3, Maryland.

Engineered Products Sold With *Service*

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THE ORIGINAL FAST'S Couplings

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SODA ASH... *better because*

it dissolves instantly!

ORDINARY SODA ASH WESTVACO SODA ASH

The pictures tell the story. We remind you here that solutions of WESTVACO Soda Ash also average 94% transmittancy value on the Fisher Electrophotomer (distilled water: 100).

Being clear, colorless and chemically pure, they are especially suited for use in organic chemical, pulp and paper manufacturing.

Without exception users of WESTVACO Soda Ash have been highly pleased with its physical properties and chemical purity. If you use soda ash anywhere in the area bounded roughly by the Mississippi Valley, the Panhandle and the Pacific, you should be using WESTVACO Soda Ash.

We'd like to help you do just that.

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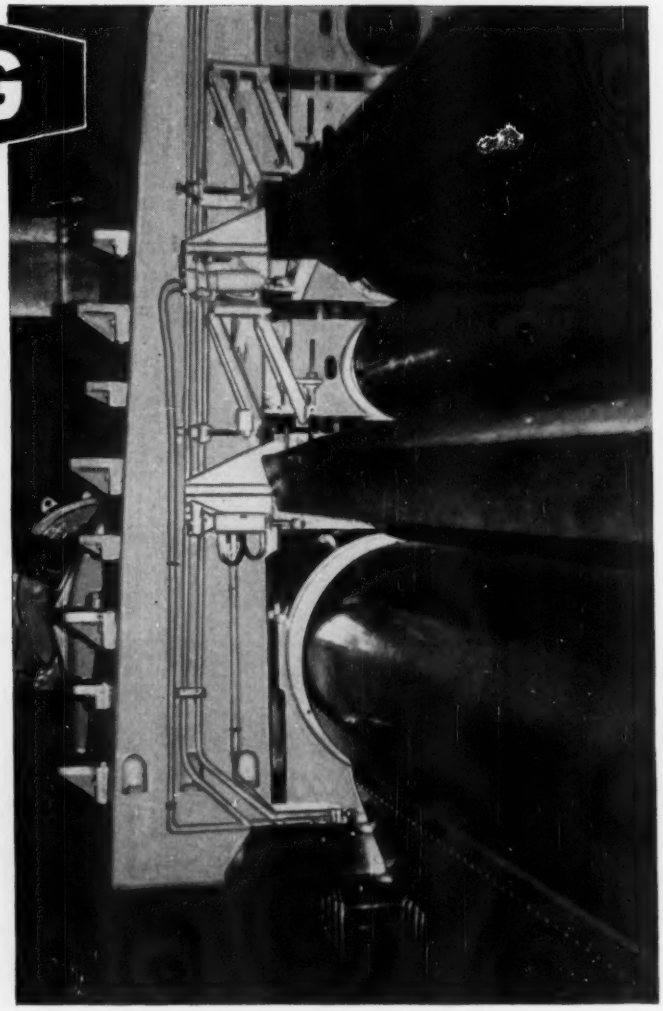
FMC CHEMICALS INCLUDE: BECCO *Peroxygen Chemicals* • WESTVACO *Alkalis, Chlorinated Chemicals and Carbon Bisulfide* • NIAGARA *Insecticides, Fungicides and Industrial Sulphur* • OHIO-APEX *Plasticizers and Chemicals* FAIRFIELD *Pesticide Compounds and Organic Chemicals* • WESTVACO *Phosphates, Barium and Magnesium Chemicals*

LODDING

Just what the doctor ordered....



Lodding special linkage design because of special frame on this calender . . . . doctors retractable for roll changes. Another example of the long-standing Lodding principle:

Recognizing service requirements.

Delivering *results.*

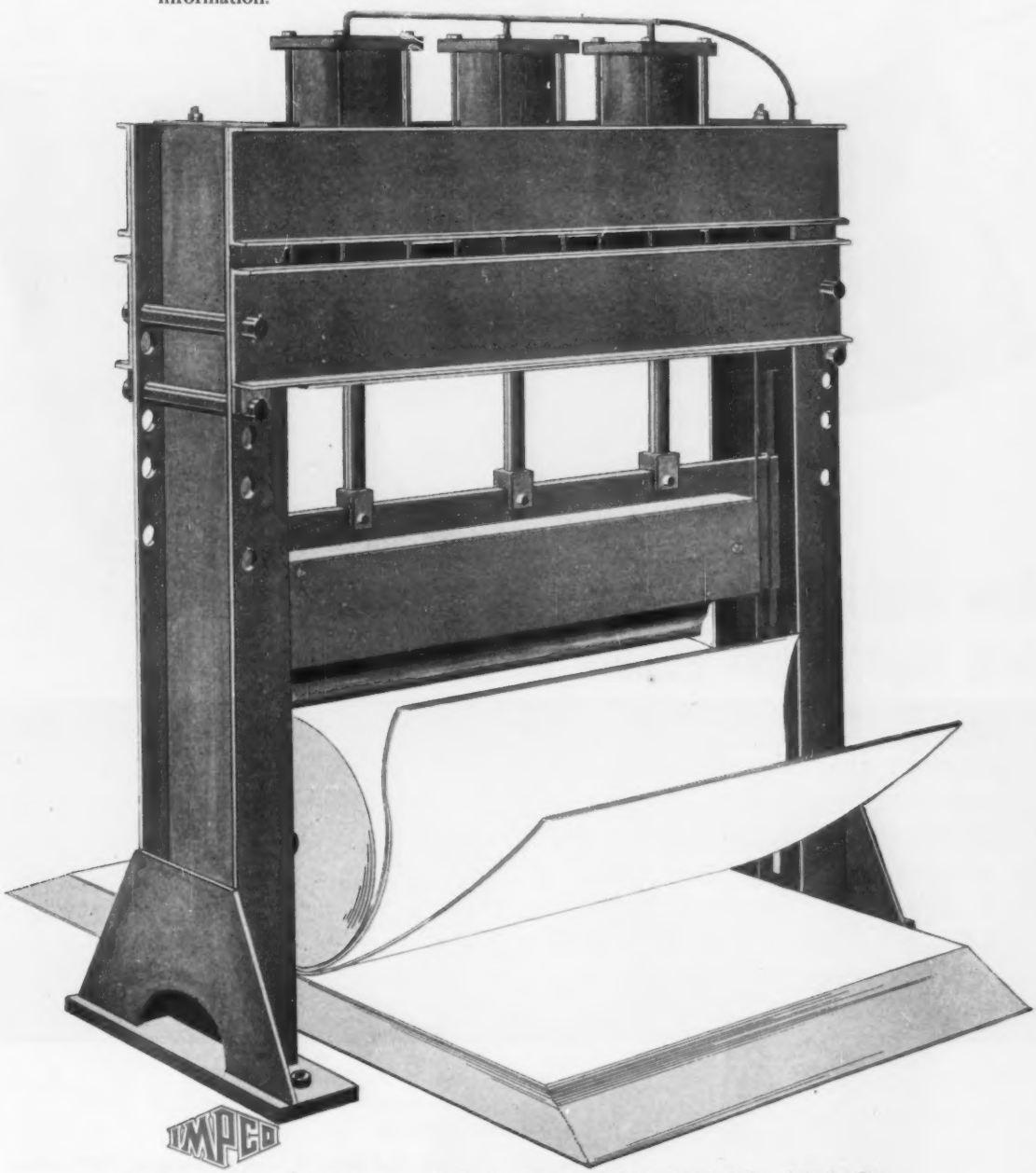
LODDING ENGINEERING CORPORATION

WORCESTER, MASSACHUSETTS

IMPCO GUILLOTINE ROLL CUTTER

IMPCO now offers this recently developed, mill-proven machine used for the rapid slabbing of off-standard rolls. We build this unit in three sizes to handle 60", 72" and 90" maximum roll lengths, each capable of cutting rolls up to 60" in diameter.

The overall height requirement of the largest model is but 12' and occupies a floor space area of only 3' x 10'. Send today for Bulletin J5-1 for complete information.



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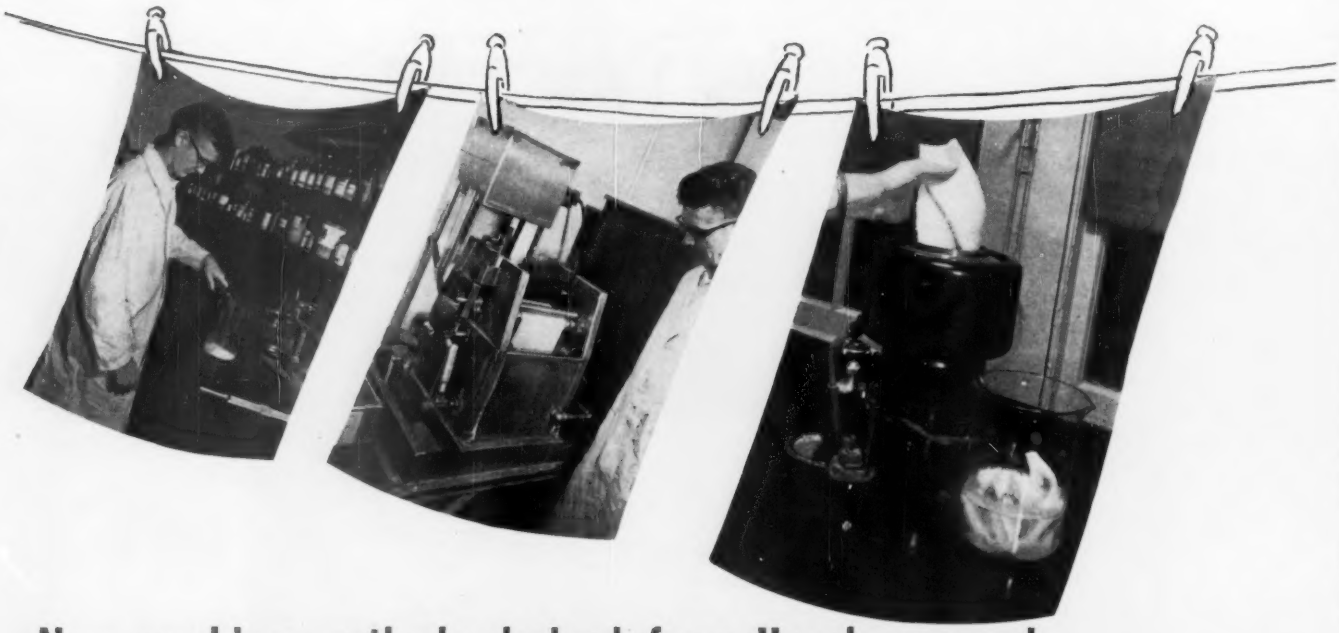
NASHUA, NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Limited
Sherbrooke, Quebec

Every day is "laundry day"



New washing methods derived from Huyck research help papermakers achieve better felt performance

Developing *better* ways of "laundering" papermakers' felts is an everyday project for Huyck's research staff.

It calls for the continual evaluation of typical washing products . . . and paper mill washing methods.

Using this felt cleaning information, Huyck is steadily coming-up with *new ideas* for the cleaning of felts — to *improve* their water removal . . . performance and life.

Know-how, accumulated by this continuing research is available to every papermaker. *Your* Huyck Field Service Engineer will be glad to tell you more about it.

FREE FELT WASHING BULLETIN

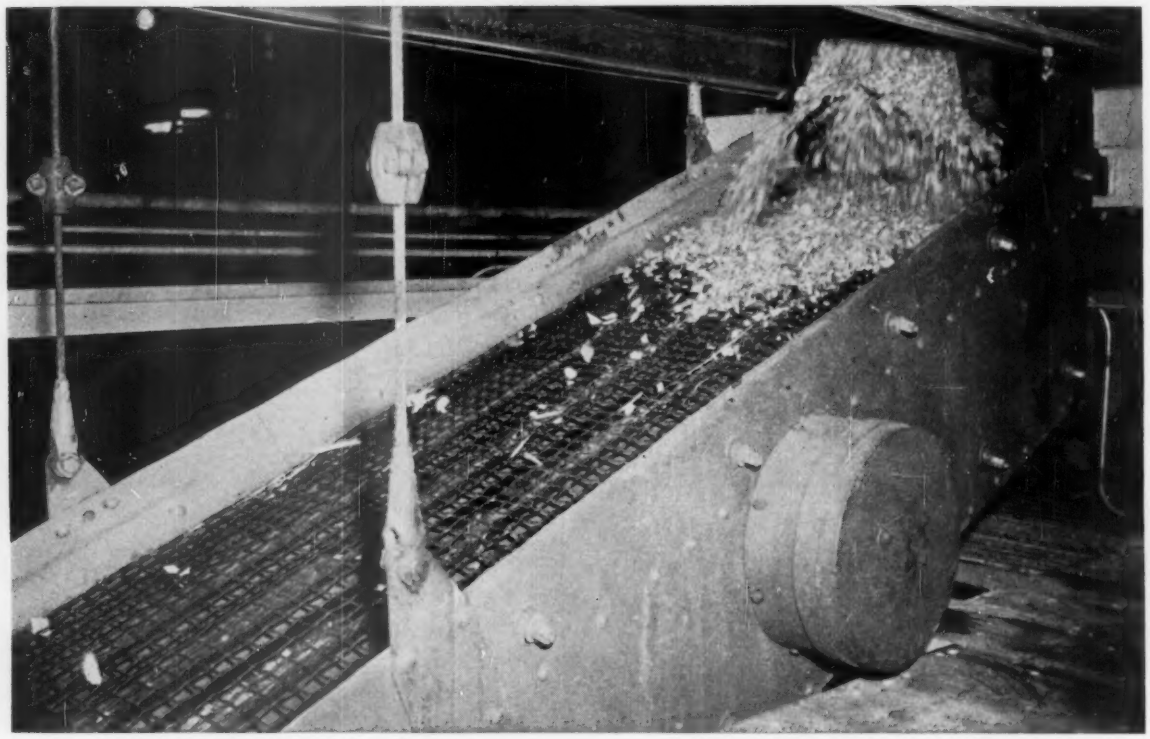
Write today for your free copy of "The Cleaning of Papermakers' Felts" (Vol. II, No. 3), giving highlights on the care and washing of felts.

Photo Captions:

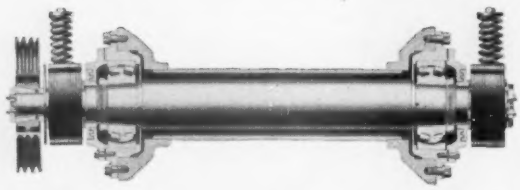
Reading left to right: (1) Preparing typical mill washing solution. (2) Washing felt in miniature felt washer. (3) Extracting washing solution. (4) Determining weight loss during washing.

NEW!
HUYCK FELTS
FIRST IN QUALITY . . . FIRST IN SERVICE
F. C. HUYCK & SONS Established 1870
Rensselaer, New York • Aliceville, Alabama
Peterborough, New Hampshire • Cavendish, Vermont
IN CANADA: KENWOOD MILLS LTD.
Arnprior, Ontario • Established 1918

Sure way to get TOP OUTPUT of accurately-sized chips



LINK-BELT CA Vibrating Screens assure fast, efficient screening under all conditions



Two-bearing vibrating mechanism is grease-lubricated and has high capacity, taper bore, self-aligning roller bearings. Efficient, frictionless labyrinth seals exclude dirt and abrasive dust from vibrator housing. Spring-controlled centrifugal weight type counter-weight assembly eliminates excessive resonant motion in starting and stopping.

CONCENTRIC-Action Link-Belt CA Vibrating Screens will give you top-volume separation of chips from slivers and sawdust . . . with positive, uniform, circular motion that affords each particle maximum sizing opportunity.

This efficiency stems from the completely enclosed two-bearing vibrating mechanism with unbalanced weights that are easily adjusted to change the amplitude of vibration. In fact, all design details are directed toward fast, sure stratification, minimum maintenance and power requirements. For more facts on single, double and triple-decked CA screens, call your Link-Belt office or write for new book.

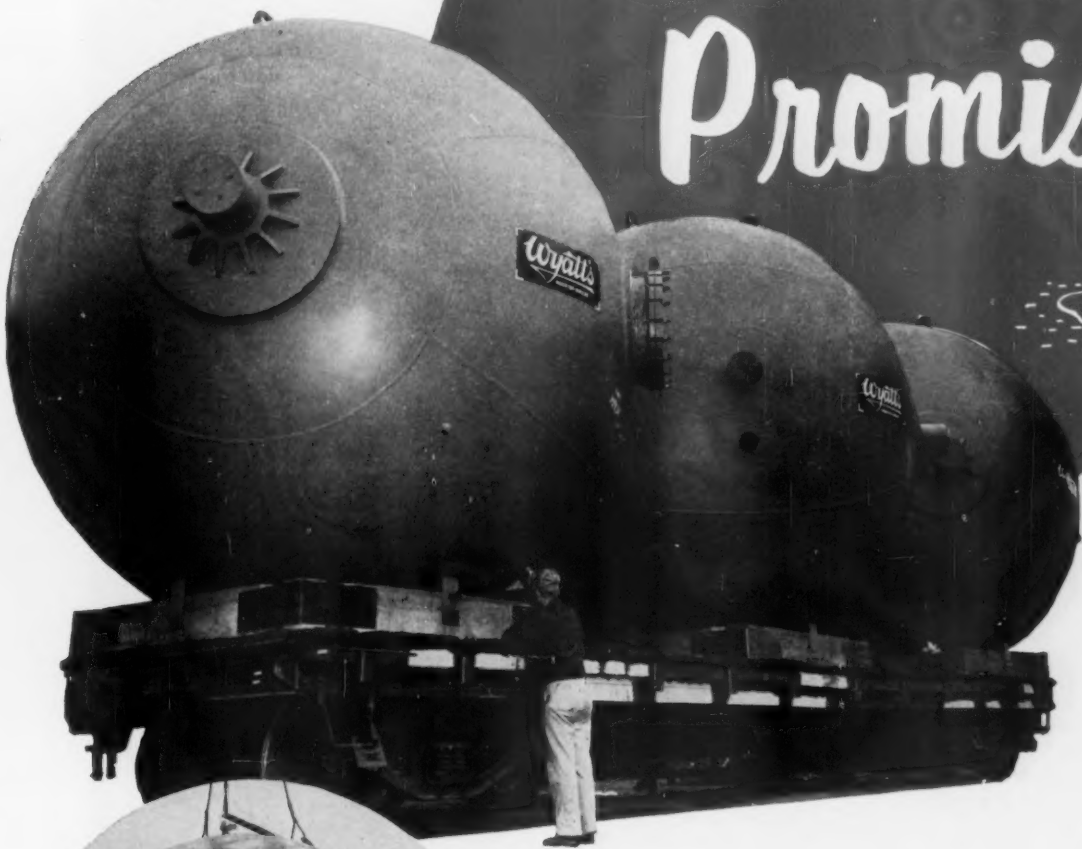
New Book 2554 contains full selection and operational data on Link-Belt CA Concentric Action Vibrating Screens. Send for a copy today.

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13.852

BIG in Promise



These digesters, of 7/8" plate, each 15'6" I.D., weight 32,450 pounds, served in producing the first domestic paper from sugar cane stalk.

The plant, designed and built by Brown & Root, Inc., for Valentine Pulp and Paper Company has daily capacity for approximately 50 tons. The venture is Big in Promise since within 100 miles of Lockport, Louisiana, 750,000 tons of bagasse are available each year and this raw product yields up to 50 percent in finished paper.

Wyatt Metal & Boiler Works is proud to have a part in this promise of converting agricultural waste into useful merchandise.

Wyatt's

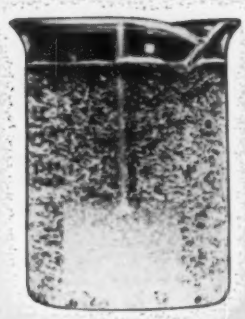
HOUSTON-DALLAS-NEW YORK-TULSA

MANUFACTURERS AND ERECTORS SINCE 1913

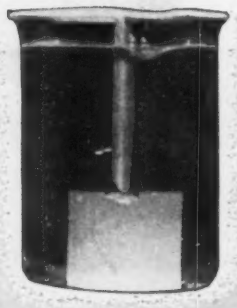
A New, Better Coagulant

NALCO 600

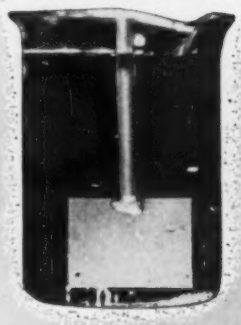
POLYELECTROLYTE



Alum



Alum plus
typical polyelectrolyte



Alum plus
Nalco 600

● As a coagulant in water clarification, and under many process coagulation conditions, new and different Nalco 600 has shown such great promise, both in performance and economy characteristics, that it has now been made available for general use as an established member of the Nalco family of chemical aids to industry.

Extremely difficult coagulation conditions provide especially economical applications for Nalco 600. It can be used alone or in conjunction with other coagulants. A very low dosage of Nalco 600 usually permits as much as 50% reduction in dosage of alum, activated silica, iron sulfate or clay type treatments . . . and results in a cleaner, clearer supernatant liquid.

Nalco 600 was invented in the Nalco Laboratories, and is being manufactured *only* by Nalco. For complete data on Nalco 600, and expert technical assistance to solve your clarification and coagulation problems, call Nalco now.

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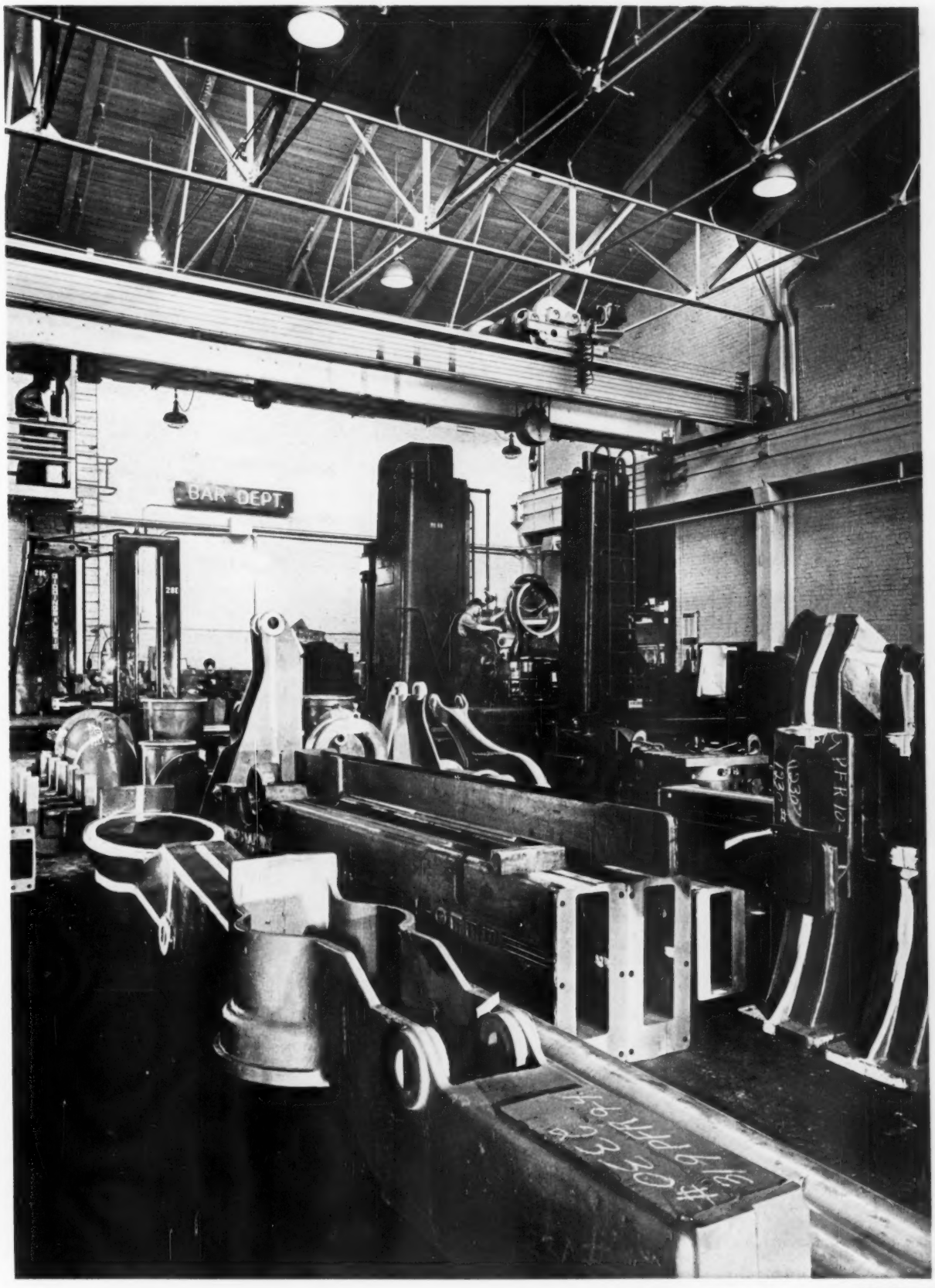
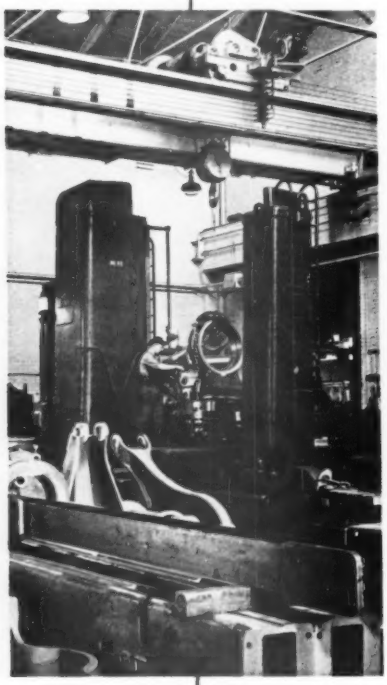
ANOTHER *Nalco*®
PRODUCT. Serving Industry through Practical Applied Science



TORKEL KORLING

ALIGN AND CENTER... *Bar Department, Beloit Iron Works.*/ *For further details, please turn the page.*

ALIGN AND CENTER



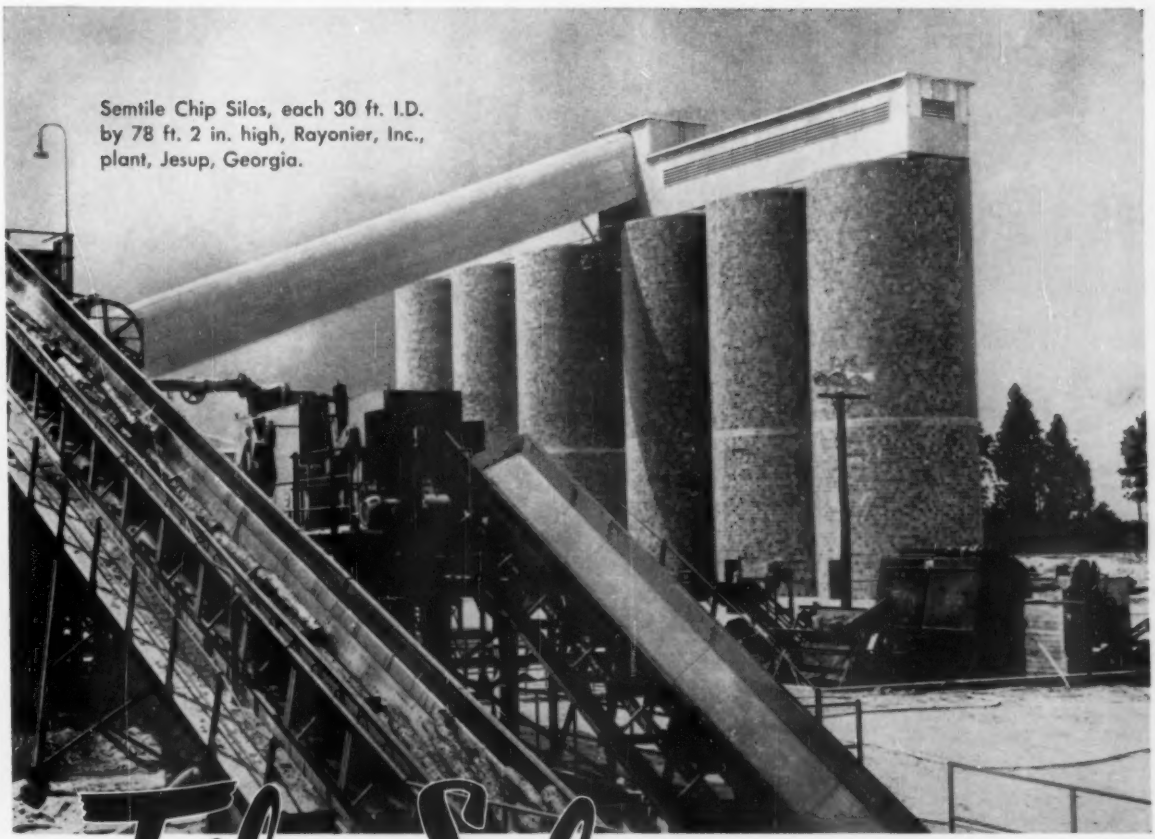
The picture on the preceding page shows two horizontal boring bars in the Beloit Iron Works Bar Department. Boring bars are indispensable for long work —maintaining alignment and centers to within thousandths of an inch in both horizontal and vertical plane. The king roll bearing housing being lowered on the table and massive press framing parts are typical of the jobs performed on Beloit's boring bars. Experienced machinists working with modern machine tools make each Beloit product a precision product designed and built for years of dependable service.

your partner in papermaking **BELOIT**

PAPER MACHINERY

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A. ·

WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE!



Semtile Chip Silos, each 30 ft. I.D. by 78 ft. 2 in. high, Rayonier, Inc., plant, Jesup, Georgia.

Tile Silos

for Storage of Dry Materials

These enormous chip silos, engineered and erected by Stebbins, are steel-reinforced concrete faced inside and outside with vitrified tile. No forms were required—a Stebbins construction method that results in substantial savings.

If you require facilities for storing materials—dry or wet—in large or small quantities—it will pay you to get Stebbins' recommendation. Or if you need corrosion-resistant process vessels, Stebbins' unequalled experience and facilities for the application of linings and the construction of tile can be extremely valuable to you.

Write for Bulletin A-153

SINCE 1884
Specialists in Design Installation and Servicing of Linings and Tile Tanks

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STEBBINS ENGINEERING CORP. — 1504 TOWER BLDG., SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — TOWN OF MOUNT ROYAL, MONTREAL 9, CANADA

FOR COATED MAGAZINE PAPER: fibrous filler

has demonstrated a marked improvement

in **BRIGHTNESS**
BULK
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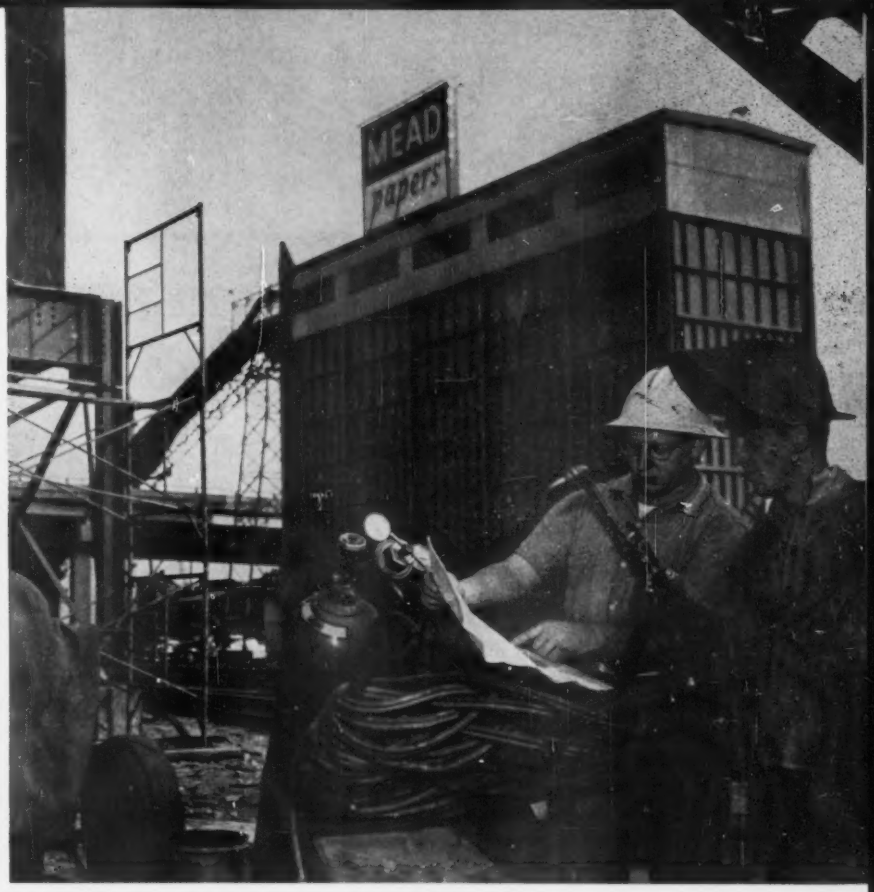
NEW YORK 17, N. Y.

SAFETY MEN LIKE TO BE BUTTONHOLED. . . . A posey for safety. Anticipatorious recipients line up for gift at one of the 188 manufacturers booths which displayed safety equipment, aids and ideas at the National Safety Congress.



WORKING IN SAFETY AT CHILLICOTHE . . . At The Mead Corp. mill in Ohio, where expansion and improvements have been going on for a long time, its Chillicothe Realty Co. construction crew has set a high safety mark, which was noted at the Safety Congress in Chicago. PULP & PAPER obtained this picture direct from Chillicothe after the Congress—showing some of the crew at work there. This Mead group had an accident-injury frequency of 5.5 last year (construction industry as a whole had 19.3 for 1955), having improved from a frequency of 41.51 in 1947 to a low of 3.5 in 1954. They also had a low severity rate of .25 in 1955; have been .6 or under for 7 of the last 9 years (construction industry severity rate was 2.06 to 2.72 days lost per 1000 man-hours worked).

Chillicothe Realty Co. employs 160, under supervision of JAMES LUNGO, Supt., and JOHN COOKE, Asst. Supt. RALPH MYERS is Safety Supr. for both Chillicothe Realty and Chillicothe Div. of Mead Corp. FRANCIS H. WAGNER is Director of Safety for all Mead operations, which include operating divisions in 7 states.

Chillicothe Realty operated 606 injury-free days to Nov. 1, 1956, since its last disabling injury on Mar. 5, 1955. They have worked approximately 610,154 injury-free man-hours. This record is continuing.

A SPECIAL PULP & PAPER REPORT

Debunking Notions About Noises

Chippers, refiners, saws—research is needed to quiet them; when noises reach 144 decibels, it is time to take action.

● Biggest single problem today in this industry's campaign to "stop that noise" in the pulp and paper mills are the chippers.

Refiners also are a noise problem. But there are others, too. Saws, conveyors and, of course, paper machines. Manufacturers as well as the mills themselves have research men, including specially trained physicists, working to subdue these noise-makers. But despite all efforts to reach solutions, many noises still aren't baffled —but the experts are.

On the other hand, there is "no reason today for having a noisy suction roll." That piece of equipment used to be the "Industry Enemy No. 1" in the campaign for more quiet machine rooms. But the suction roll finally has been robbed of its painful scream.

These are some of the general conclusions laid before the Pulp and Paper Section of the National Safety Conference in Chicago by Dr. Ralph H. Caston, Kimberly-Clark physicist. He freely admitted "I have been skinning my nose on noise problems in the mills for five years, and there are still some I don't know what to do about."

As PULP & PAPER exclusively reported in April 1955, the American Paper & Pulp Association at Paper Week, in that year, officially launched a program to stop injurious noises in their mills. It is a serious problem because loss of hearing is a gradual,

All-Out Safety Drive – New Industry Code

• An intensive all-industry drive for safety—beamed at one time toward every mill and woodlands employes of some 1,000 United States and Canadian mills. . . .

As conceived by the Pulp and Paper Section of the National Safety Congress, every association in the U.S. and Canada—APPA, CPPA, NPA, NPTA, Pulp Producers, Pulp Consumers, TAPPI, the American Pulp & Paper Mill Supts Assn., and all other industry associations, would join in the campaign and contribute financially toward its success.

Besides the thousand or more primary mills, several thousand converting plants are expected to join in the campaign.

A record-breaking National Safety Congress, which brought more than 12,000 delegates to Chicago in late October with five crowded days of meetings in five big Chicago "Loop" hotels, was "the breeding ground" for this stirring scheme for putting safety across in the industry with a bang.

It isn't a new idea in industry. Steel did it, and in so doing brought about a remarkable reduction in the steel industry's lost-time injury frequency rate.

Another phase of this campaign would be to bring spokesmen for the other associations to the anuual safety conference in Chicago. For two years, APPA has been sending a spokesman.

It is expected these plans will be officially discussed and may be acted upon at Paper Week in New York during the week of Feb. 17 and at the Canadian industry meetings in Montreal in late January. Paper and paperboard converters are also enrolled in the campaign.

Most of the publicity about the National Safety Congress, the 44th annual meeting of that organization, had to do with the appalling carnage on the nation's highways. But air transport, the marine field, the railroads, public employes, utilities and various industries all had organized sections which met in Chicago. Besides, there were "subject sessions" on medicine, machine guarding, material handling, home safety, electricity, employe attitudes, etc. All organized sectional sessions were in the afternoons—thus, their delegates were free to attend the "subject sessions" in forenoons. The Army, Navy and Air Corps had sessions, too.

TO TIE TOGETHER ALL SAFETY ACTIVITIES. . . . In advocating the new plan for a concerted campaign in this industry, leaders of the Pulp and Paper Section of the Congress pointed out that safety activities in the industry at present are carried on by disassociated groups at different times and with varying degrees of participation. There is the Joint Management-Labor organization on the Pacific Coast, first of its kind in any industry; the Southern Pulp and Paper Safety Assn., which meets once a year but carries on a continuing program; similar groups in Ontario and in British Columbia, etc. But all pulp and paper regions are not so organized. Some companies with multiple mills have their own organizations and conduct contests among their mills.

The all-industry campaign is being advanced under leadership of Fred O. Soughton, services and safety supervisor of Kimberly-Clark's LongLac Pulp and Paper Co. Ltd., who became

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insidious process—the victim doesn't know it is happening until deafness is well advanced.

DEBUNKING FALSE NOTIONS . . . There are still a lot of erroneous conceptions in the industry about noises. For instance, noise causes fatigue, but noise—in itself—does **not** cause inefficiency, said Dr. Caston. The Kimberly-Clark man, graduate of the Universities of Akron and of Notre Dame, who spent four years in radar work and ten years tackling physics problems in the pulp and paper field, put it this way:

"As mills speed up, noises become more serious. A noisy shop is like a dirty shop. It is a bad environment. Workers are unable to properly communicate. A morale factor is involved. The worker goes home to his wife and children in a grouchy mood.

"If your worker is leaning up to the ear of another worker in order to communicate, then you have got a noise problem on which it is well worth spending considerable money to remedy."

However, he warned that mills should be wary of the relative aspects of noises. No two persons hear the same noise. How loud a noise appears to be, depends upon its environment. Mills should be careful in evaluating noises. The sure way is by measuring them.

When noises reach 114 decibels, then it has reached a point where the sound is painful, said Dr. Caston.

HOW NEWSPRINT AND TISSUE MILLS SOLVED PROBLEM . . . In a newsprint mill which is running at 1600 to 1700 fpm, are others besides the machinetender affected by the noise? Couch rolls and press sections are the main noise sources, also breaker stacks. Couch roll noise is only serious around the wet end of the machine.

The Abbott & Kraus silencer introduced in the tissue mill of Kimberly-Clark Corp. at Kapuskasing, Ont., is one of the gadgets which finally have licked the familiar machine-room whine of suction rolls. Scott Paper Co. also has developed a method of quieting the suction roll. Powell River Co. has produced an abatement device. The Canadian Research Institute has pioneered in this work, too. The paper machine builders have contributed, in one case, at least, putting a full-time man on the assignment.

Special stories on the successful campaign to quiet the suction roll were reported in PULP & PAPER, Aug. 1955 issue, page 92, and June 1955, page 65.

Suction roll noise occurs where the roll leaves the vacuum area and there is an abrupt air pressure change. Here, said Dr. Caston, the Abbott & Kraus silencer utilizes a packing strip. The Canadian National Research Council, he said, also arranged a drilling pattern on the rolls so air from pockets would cancel each other. In the Aug. 1955 issue, PULP & PAPER reported how C. W. E. Walker, Powell River Co. physicist, effected "noise cancellation" by cutting a calculated pattern in an inch wide micarta sealing strip, so noise passing into one hole is offset by noise from another. It is effective at any machine speed. A Research Council couch silencer is installed at International Paper Co., Gatineau, Que.

CHIPPERS, REFINERS AND SAWS POSE PROBLEMS . . . "But we have no nice method such as this to abate the noises of chippers, refiners

the new chairman of the Pulp and Paper Section this year, succeeding Francis H. Wagner, director of safety for The Mead Corp. Born in London, Ont., 43 years ago, Mr. Soughton graduated from Toronto University, was formerly with the Y.M.C.A., in his own advertising business and did some radio broadcasting and spent five years in the army before he got into safety work when the LongLac mill was built at Terrace Bay, Ont., 10 years ago.

He has a 70-man executive committee to plan Pulp and Paper Section activities, including a program for the 1957 Congress. Those members in Chicago heartily supported the all-industry campaign project.

So did the Wood Products Section of the Safety Council, chairmanned by Robert M. Gilmore, Rayonier's safety director. Pulpwood logging is included in this section—and it is easily the biggest part of it, as the Chicago program this year revealed.

There were some 200 registered for the Pulp and Paper Section and over 300 were "in and out of meetings," according to officers. The Mead Corp., for example, sent 17 safety men from its various mills. Kimberly-Clark likewise had a large delegation. The Wood Products Section couldn't come close to this in attendance, but the spirit and quality of its program was high, too. Largest group in Wood Products was from logging divisions of companies which manufacture pulp and paper, far exceeding the number from lumber or other woods fields.

SAFETY CODE FOR ALL INDUSTRY. . . . Another major project announced at the National Safety Congress is completion of a Pulp and Paper Industry Safety Code. Mead's Mr. Wagner announced this news. He said, also, a new safety manual will be published by sections, as soon as each important chapter is completed.

The new industry Code now has approval both of the American Paper and Pulp Assn. and of the American Standards Assn. It will probably become part of the law or regulations in various states. States are only enforcing agents of such codes, and many adopt them as law.

WHAT ABITIBI HAS DONE. . . . Management had a spokesman at the pulp and paper meetings in Chicago—R. J. Askin, vice president of manufacturing, Abitibi Power & Paper Co. Ltd. He disclosed that his company has launched an extensive safety training program for all of its supervisors. It has also completed, at cost of more than $25,000, a movie on safety entitled "It's in the Cards." This movie won a Congress safety award and is available for showing wherever groups desire it. It gives general information on safety as well as case histories of serious accidents.

Mr. Askin stressed management's role in safety must be actual participation, "not just lip service," if the program is to work at its best.

Harrison J. Daysh, secretary, industrial relations committee, APPA, said that management association will expand its activities in safety, which have included circulating statistics from member mills, reports on major disabilities and accidents and costs of accidents. It is not decided as yet just how APPA will expand this work.

Dallas Henry, safety director of Robt. Gair Co.'s Southern Advance Bag & Paper Div., Hodge, La., named the new slate of officers nominated, which were duly elected. Besides Mr. Soughton, these are: Vice chairman and program chairman—Earl F. Ripstra, personnel mgr., Container Corp. of America's Chicago Division; Newsletter editor—Robert G. Belknap, personnel mgr., Bemis Bro. Bag Co., East Pepperell, Mass.; and secretary and membership chairman—George R. Merriam, safety coordinator, International Paper So., Southern Kraft Division, Mobile, Ala.

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and saws," Dr. Caston told the industry safety directors and supervisors assembled in Chicago. "You should put the bee on the manufacturers to help. Some are doing so. You wouldn't go out and buy yourself a noisy automobile." He conceded the problem was a tough one, but he pointed out that research has resulted in quieter motors and pumps than were formerly on the market.

FACTS ABOUT ACOUSTICS . . . Acoustically treating a room, he explained, only abated the noises that reflect from walls, etc. It doesn't do any good for a man close to the noisy machine, and it only reduces noise about 50% for the man some distance away from the source.

Vibrating machines cause noise throughout a room if the vibration reaches the floor. Any manufacturer who sells shock mounts, he said, would be glad to help solve some of the noise of this nature.

He indicated the industry cannot expect to do much good by trying to redesign chippers or refiners, and there are limitations on sound proof enclosures. He showed pictures how a conveyor area, where conveyors in two directions met, were partially enclosed. The entry and exit end of the enclosure had to be open. But it helped some.

A plywood box housing a noise maker is no good—it doesn't reduce noise until it is lined inside with sound-absorbing material.

Panels may be used around a noisy machine. This won't reduce noise for the operator, but it will for others. However, he said, it does some good for the operator—"Because he can tolerate his own machine noise and he is not immersed in other noises around him."

KEEP SELLING EAR PLUGS . . . Because hearing loss sneaks up on victims, he urged the safety men to warn and teach employes to wear ear muffs or ear plugs, even though they don't like them. "In some mills they like to wear cotton in the ears instead, but it doesn't do much good," he said. "Keep trying to get them to wear the soft rubber ear plugs."

There are two ways to attack noise problems—eliminate the source, or block the noise from the listener.

"We have to keep after this problem," said Dr. Caston. "We have to spend money. We have to make trials. We have to interrupt production to some extent. But if we keep at it, sooner or later we will get rid of many damaging noises in our mills."

MANAGEMENT SPOKESMAN, R. J. ASKIN, Vice Pres., Mfg., Abitibi Power & Paper Co. Ltd., was a featured speaker at the Pulp and Paper Section of the National Safety Congress. He said actual participation of management in safety work and planning is essential if it is to succeed. He told of a $25,000 movie, "It's In the Cards," giving safety facts and case histories, which is available for showings.

"CHAMPION" COMPANY AND PRIZE WINNING MILL

Minnesota and Ontario Paper Co. was winner for 1955 of the Arthur Hoyt Scott Safety Award donated annually by Scott Paper Co. This is for an entire company with multiple operations (not including subsidiaries with separate safety organizations), which has the best safety record in the industry according to National Safety Council records.

For the second year in a row, the Newcastle, N.B., Canada, kraft mill of Fraser Companies, Ltd., was 1955 winner of the Edward Benton Fritz award. This goes to the highest individual pulp-paper mill in the Council's Division 1 of the industry, which also submits additional required reports to qualify for this award.

Winners were announced at the National Safety Congress in Chicago in late October.

THEIR SUBJECTS: REDUCING NOISE—JOB PLACEMENT. At special session of Pulp and Paper Section, Safety Congress, Chicago (l to r) FRED SOUGHTON, LongLac Pulp and Paper Co. Ltd., Chairman; RALPH H. CASTON, Physicist with Kimberly-Clark Corp., who has been working on noise problems in mills for five years; and DR. ROBERT L. QUIMBY, Medical Director, Prevention Services, Liberty Mutual Insurance Co. who offered a new continuing medical rating system for workers because a job may be like a suit of clothes—it may not fit after a few years.

What's Wrong with Job Placement?

New approach to an old problem is presented at Pulp and Paper sessions; "pitfalls" in current methods revealed

"Job Placement in Accordance with Physical Capacities" was subject of an unusual talk which attracted great interest at the Pulp and Paper Section of the National Safety Congress.

There was much advance comment and anticipation, as PULP & PAPER was informed by delegates that the speaker, Dr. Robert L. Quimby, had already made a favorable impression in other industries with his new job placement ideas.

Actually, Dr. Quimby figuratively tore up a 1,300-word advance "handout" of his speech in an attention-gripping talk which went far beyond the text of release. A graduate of Dartmouth, a former teacher at McGill University and a Medical Corps commander in the U.S. Naval Reserve, he is presently medical director of Loss Prevention Medical Services, Liberty Mutual Insurance Co., Boston, Mass.

He indicated how disabilities of workers can be prevented by changing their jobs. He showed the inaccuracies and weaknesses of many placement tests now being made. He advocated a particular system for "continuously adjusting the changing worker to a changing job." He called his scheme a positive medical and job placement approach which deals with: (1) abilities and not disabilities, (2) individual workers and not groups, and (3) specific terms and not generalities.

THE NEW SYSTEM . . . Dr. Quimby presented a system which utilizes two forms. One lists 80 factors for job qualifications, giving exact data. The other form lists 80 physical capabilities, filled in by the doctor. These match the man to the job. The system can be continually used through the man's working career.

Monsanto Chemical Co., Everett, Mass., is using Dr. Quimby's system and he said this company has been able to get a lot of handicapped men back on useful jobs.

He showed other rating methods, including some well known ones widely accepted in industry and government, and he pointed out many "pitfalls" in them. He described one widely used physical capacities form "as too nebulous."

FOUR CONCEPTS . . . There are four different concepts of how to place a worker, said Dr. Quimby:

1. The intuitive. Based on a worker's own opinion of his abilities. The hiring boss makes a judgment. This is a "sterile concept" because you can't look at a man and know if he has back trouble, a hernia, etc.
2. Change a worker to fit a job. You might increase his abilities by surgical or medical action.
3. Change a job to fit the worker. Almost any job can be engineered so it is less arduous.
4. The continuous process of adjusting the changing worker to the changing job. This is the "most helpful concept."

To use this method, mills must have pertinent and up-to-date information on jobs and probably must overhaul some ideas on placement.

HOW NEW FORMS ARE USED . . . The physical demands form details 49 physical factors and 31 environmental factors. Each is rated in terms of hours or parts of hours required and a figure placed in a box to the

left. General terms like "light, moderate and heavy" are avoided. Terms are clear and specific.

The doctor's form evaluates individual factors in terms of hours or parts of hours which he feels are within the abilities of the job applicant to carry out. The placement officer doesn't have to guess at what a physician means by "prolonged standing" or "strenuous pushing"—vague terms used in many forms today. The placement officer can match the exact physical capacities with the exact physical capacities form.

Dr. Quimby urged that the physicians re-evaluate physical capacities at periodic intervals and note any periodic or temporary job changes that are indicated.

CAN'T PREVENT HEART DISEASE BUT— . . . "We can't prevent heart disease through hardening of the arteries but we can prevent development of a disability by changing a man's job," he said. "We do not know the cause of diabetes, but we do know what to do when a man with diabetes is hurt."

At another point he declared "unless a physician comes to a plant, he can't really know the conditions." He stressed that "good placement is of benefit to the employer as well as the employe."

Not only are many of the placement programs now in use in mills "too vague and too general," but they are merely designed "to weed out the less physically fit," he said, "and usually the doctor does not translate physical abilities into work abilities."

In favoring a continuing program, he pointed out that jobs are frequently revised and physical demands may change. Certainly, the worker himself is continuing undergoing physical changes. He may have a skill for a job, but not be physically fit for it.

In stressing his "positive approach," he commented that emphasis should not be upon the disability of a one-legged man. "His remaining abilities may vary widely," he said.

MEAD'S "FRAN" WAGNER KEEPS BUSY. FRANCIS H. WAGNER (at left in top picture), wound up year's term as Chairman of Pulp and Paper Section of Safety Congress. He is Director of Safety for The Mead Corp., and was leader in developing new Safety Code for this industry and also a Safety Manual, soon to be issued.

In top picture he is giving few tips to ROBERT G. BELKNAP, Personnel Mgr., Bemis Bro. Bag Co., East Pepperell, Mass., new Newsletter Editor for P&P Section. Below, OAKLAND C. BAZLER (standing), veteran Safety Director of Chillicothe Paper Co., is helping Mr. Wagner check up on some of 17 delegates who attended from Mead mills.

Accident Case in Midwest Discussed

A dramatic accident case recently occurred in a Middle West pulp and paper mill, where a workman fell into a tank and was fatally overcome by heavy gases in muck at the tank bottom, and several others heroically went in after him. Each one was temporarily overcome, until finally rescuers came with gas masks. One rescuer held another's head out of the muck long enough to save his life, but both passed out. Some victims were critically ill a long time.

The case came up for discussion at a meeting of the Pulp and Paper Section of the National Safety Congress held in Chicago in late October. The consensus was that this case pointed up the need in mills for equipment that would remove the heavy gases that remain in the lower areas of some vats and tanks. This air has to be exhausted and new air brought into the lower region. A portable exhaust fan and a portable intake fan were suggested. Placed at the bottom of the tank, they would serve to pull gas off the bottom and bring in fresh air.

The discussion came up at a "Paper Converting" session chairmanned by assistant personnel manager, Bemis Bro. Bag Co., Peoria, Ill. This and other points discussed here would be useful in pulp, paper and board mills as well as the converting plants.

"TIME TO QUIT AMBULANCE CHASING." GEORGE W. HARPER, Assoc. Prof. of Mechanical Engineering, U. of Illinois, also Supt. of Safety Inspection for Illinois State Dept. of Labor, used flannel cards to show pulp and paper delegates ten unsafe conditions which can be corrected by engineering (in left hand column) and ten unsafe practices which can be corrected by training (he had three of them up on board in right column when picture was taken).

MAKING STEEL STRAPPING SAFE . . . Now that steel strapping is being more widely used for tying together all kinds of mill products, the discussion turned to ways of preventing accidents from breaking bands. It was pointed out that Acme Steel Co. will rent a pneumatic band stretcher to mills, to help prevent bands from snapping. This is practical if banding is done in one place, but not if it is done all over the plant, commented one delegate.

A report of how Eastman Kodak

trains women to use precision cutters in the dark, where they are trimming sensitized paper which must be kept in darkness, brought a comment that if employes can be taught to use such cutters safely under such circumstances, they should be easily taught to use them in good light.

"A LOADED GUN" . . . In opening this meeting, Mr. Hewitt compared an inadequately guarded or unsafe machine to "allowing a deadly weapon" to lie around, or "to stand by and permit a person pull a gun trigger and destroy himself." He noted that during the years of World War II and the Korean War, there were 400,000 accidental deaths and 40,000,000 personal injuries in the United States compared to 261,000 killed and 800,000 injured in those wars. But, he added, fewer were killed in industries than in homes and on highways.

"The human element involved," he said, "makes it impossible to prescribe fixed formulae for safety. Guards and protective equipment are not enough. A lot of people are unwilling to accept responsibility for their own safety or safety of others. These people require constant supervision. Training is the most effective guard." He noted that "safety workers and engineers never know how many lives they save, or injuries they prevent—only the casualties are reported." But he invoked the commandment "Thou Shalt Not Kill" as making it their duty to do all in their power to prevent accidents.

DISCUSSED RECENT MIDWEST ACCIDENT. Panel at Paper Converting session (left to right): V. P. COULON (farthest from camera), Sealright Co.; HAROLD HEWITT, Bemis Bro. Bag Co., Peoria, Ill., Chairman, and JACK HARLEROAD, KVP Co. Fatal accident in Midwest pulp and paper mill, where men were overcome by gases in bottom of vat, suggested to delegates at this session that portable exhaust fans and portable intake fans should be part of mill equipment to remove heavy gases and clear air at bottom of tanks.

A KIMBERLY-CLARK REPORT:

Safe Operation of Sulfite Digesters

When does a sulfite digester get indigestion?

According to Bernard F. Smith, chief staff assistant Development Dept., Kimberly-Clark Corp., Neenah, Wis., they can produce some king-sized—and dangerous—burps.

Speaking before Pulp and Paper Section of the National Safety Congress, he urged that all such vessels be designed and constructed in accordance with latest engineering codes. With proper precautions, there is absolutely no danger, he said.

WHY LININGS LEAKED . . . "A few years ago the first all-welded steel digesters were constructed," said Mr. Smith. "In a riveted shell each rivet is a potential source of leakage. It was reasoned that this would not happen in a welded shell. So far they have lived up to expectations regarding leakage, but other troubles developed. The linings failed.

"Several studies were made of the cause of the lining failures. Nothing definite was proven, but the consensus was that original out-of-roundness, plus change of shape when pressure was applied, were responsible. Subsequent welded digesters were installed with rigid specifications for out-of-roundness (¼ in. maximum variation on diameter). These shells were stiffened with circumferential straps or angle irons to make the stiffness comparable to riveted digesters. These have been successful.

MUST BE TESTED . . . "The digester must be tested as an unfired pressure vessel before lining," said Mr. Smith. "This includes a hydrostatic test of 1½ times the working pressure with a hammer test at the same time. This is followed by a steam pressure test at allowable working pressure.

"A welded steel sulfite digester is usually assembled and welded in place. It must then be stress-relieved. One method is by intense heat generated by burning oil inside of the digester. This is clumsy and dangerous. Another method is to apply hydrostatic pressure equal to 80% of the yield strength of the weakest portion of the digester. Still another method is to apply the maximum allowable steam pressure to the shell slowly with a maximum pressure rise of 2 psi per min. After maximum pressure is reached, the pressure is relieved as rapidly as possible. This is called a pressure bump. Six to eight such bumps are given to the shell before lining.

"Accurate measurements of the digester are taken initially and after every second bump. The changes in shape can then be plotted. It will be found that these bumps will tend to make the digester more round and it will remain so. Measuring the changes in the shape of the digester is no easy matter, but it can be very accurately done.

SAFETY VALVES ARE ESSENTIAL . . . "Every unfired pressure vessel should be protected against excess pressure," said Mr. Smith. "A digester is no exception. The safety valve should be of the air-operated type—spring opening and air closing. Each safety valve should be tested after each cook to see that it is in good operating condition.

NEW LININGS WILL LEAK . . . "A new lining in a digester will leak—it cannot do otherwise," continued the Kimberly-Clark man. "As the first cook comes up to temperature and pressure, the inside layer of brick heats up first, then the outside, then the grout backing, then the steel shell. The temperature rise tends to compress the inside layer of brick and make it tight against leakage. However, at the same time pressure expands the steel shell and thus tends to open every joint in the lining, thus causing leakage. When the digester is blown, the pressure is reduced, causing the shell to shrink and compress the lining, thus tightening it. However, the shell temperature remains high while the inside lining

WELCOME TO "PULP MANUFACTURING." FRED O. SOUGHTON, newly elected General Chairman of continent-wide Pulp and Paper Division, National Safety Congress, says welcome to Pulp Manufacturing session which packed meeting room in Chicago hotel. Paper Converting, Insulating and Roofing, Pulpwood Logging, Folding Box and Shipping Container sessions were held simultaneously. Paper Manufacturing session was next day.

temperature is reduced, thus tending to keep the cracks open.

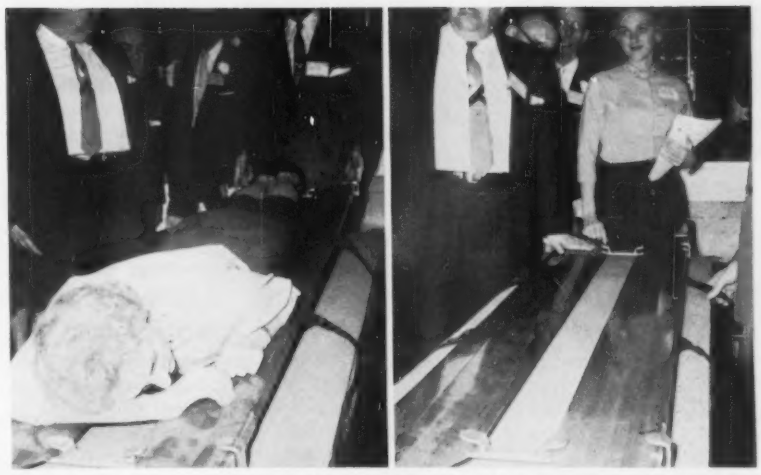
"After the digester is put into operation, salts from the acid deposit into the brick, closing up voids and increasing the volume of the brick. In about six to seven months' time the growth is adequate to eliminate leakage from this cause. It is best to leave the digester uninsulated during the first seven months so that the shell remains as cool as possible.

STARTUP OF DIGESTER . . . "After the lining is completed, it must be cured," continued Mr. Smith. "This is done by allowing the digester to stand open to the atmosphere at room temperature for five full days. After curing is completed, the lining is brought up to temperature of 100° to 120° F. by admitting steam to the bottom nozzles and venting at the top. This is held for a week or 10 days.

"The digester is preheated prior to cooking at a steady rate of 2° C. per hour up to a temperature of 100° C. Then the digester is filled with chips as rapidly as possible. Acid is added, but it should not be pumped to put a pressure head on the digester. The first cook is made with direct steaming. Pressure is raised at a rate not to exceed 5 psi per hour. Initial temperature rise to 100° C. not to exceed 6 hours. Cook is held at 120° C. for 3 hours and blowdown at a regular rate for 3 hours to 30 psi. First cook takes 24 hours.

"The second cook is a 20-hour cook, taking 14 hours to temperature, 3 hours at maximum temperature and 3 hours for blowdown," he continued. "The third cook is a 16-hour cook with 10 hours to maximum temperature. The fourth is a 12-hour cook, the fifth a 10-hour cook and from then on, the regular cooking cycle.

"During the first month of operation the lining should be carefully inspected after each cook," he said. "Any weeping should be noted and, if it is severe, it should be painted over with lime after each cook. If any leaks around fittings are noted, they should be pumped with sodium silicate. Any repairs must be made by certified welders and then O.K.'d by the insurance inspector."



HOW TO MOVE INJURED FROM SCENE OF ACCIDENT. A pretty blonde, of course, demonstrated the so-called new Non-Traumatic Carrier, one of scores of safety equipment and devices which filled several halls of the Conrad Hilton Hotel at Chicago's National Safety Conference. This carrier, made by Sarole, Inc., Linden, N. J., is used by Champion Paper & Fibre Co., St. Joe Paper Co., Shell Chemical Co., Kaiser Aluminum, DuPont and others, said sign at exhibit booth. It is a safe, efficient way to remove injured from scene of an accident. The young lady in one picture is ready to be carried away. In the other, she stands aside so the 4-piece carrier can be seen. The two wood pieces with handles are "scissored" together under the patient. Steel collar locks fit at both ends. Safety straps are shown hanging from the wooden section. These are strapped over the patient. Patients with broken back or neck, internal injuries or bad burns can be moved without disturbing them and thus causing complications, pain, paralysis or even death.

NEW ULTRASONIC GAUGE

Significant event at the National Safety Congress was the announcement of a new ultrasonic gauge for measuring digester thicknesses and preventing explosions.

This gauge uses an ultra high frequency sound to cause the metal walls to vibrate, thereby giving forth an echo, which is calibrated for accurate measurement of thickness by the gauge on the basis of the sound return.

Many of the gauges now in use to measure digester walls are merely sounding devices which resemble in principle the driving of a crowbar into solid rock till you hit rock. The new ultrasonic gauge is made by Bransom Instruments, Inc., 37 Brown House Road, Stamford, Conn. It was described by Peter K. Bloch, Bramsom sales manager.

Safety Congress delegates were told Mead, Crown Z and Kimberly-Clark are among companies using the new gauge.

What Managers and Unions Learned on the West Coast

S. W. Grimes, managing director, Pacific Coast Association of Pulp and Paper Manufacturers, told the Pulp and Paper Section of the Safety Congress than 11,753 disabling injuries, including 40 fatalities, have been prevented in pulp and paper mills on the Pacific Coast in the last 10 years since its unique Joint Labor-Management Safety Program was started in 1946.

"That represents less pain and suffering and lost income to our existing employes and their families; it represents a better climate in which to obtain and retain an intelligent and capable work force; and it represents a reduction in direct and indirect accident costs of $7½ million a year to our group of mills," he said.

The decrease in the frequency of injuries has been phenomenal. Member mills in Washington, Oregon and California had an over-all composite frequency rate of 39 injuries per million hours worked at the start of the joint labor-management program—first of its kind in the world. Using round figures, the rate of injuries went down to 33 in 1946; 26 in 1947; 15 in 1948; 12 in 1949; 9 in 1950, and so on each year to the 6½ disabling injuries per million man-hours in 1955 for the 44 member mills. (See March 1956 issue, PULP & PAPER).

The joint conferences in the three Coast states are well attended, said Mr. Grimes. Most of the 44 mills and many of the local unions send a greater number of delegates than the number to which they are committed. It is not uncommon for mills which happen to be located in the near vicinity where a conference is being held to send half of their supervisory staffs to the first day of the conference and the other half to the second day's proceedings. Approximately 500 people attend one or the other of the annual series of conferences in three Coast states. Most plant managers are in attendance and it is quite usual to have a considerable number of presidents and vice presidents of companies present.

The papers and material presented at the conferences are of a caliber measuring up to the best efforts of

HONORED AT NATIONAL SAFETY COUNCIL. SID W. GRIMES (left), Managing Director of Pacific Coast Assn. of Pulp and Paper Mfrs. and General Chairman last March of the 10th anniversary Labor-Management Safety Conference for 42 west coast mills, was elected a new Director of the National Safety Conference, the only one from this industry. He started in the industry as a machinist with the Rayonier mill at Shelton, Wash., in 1927. He was Personnel Mgr. at Rayonier's Port Angeles mill when that company released him to serve the Coast Assn.
GEORGE LAHUSEN (right), General Safety Director for all Crown Zellerbach mills, is reflecting pleasure in the national honor for his old friend in safety work.

any technical meeting in the industry, he said. Subjects dealing with human reaction and behavior as it affects safety are regularly scheduled.

"Many of our management people are coming to realize that accident prevention must be considered from exactly the same angle and with the same degree of importance as any product quantity or quality problem," said Mr. Grimes.

CRITICISMS—OF MEETINGS AND UNIONS . . . Mr. Grimes reported that mill managements discovered safety meetings were not run as efficiently as they should be. Too many meetings were being held without proper planning and without proper leadership. Too much time was spent in talking about mechanical guards and corrections and not enough time on the human phases which cause unsafe practice. This was corrected.

"Management, at first, was critical of the unions' practice of objecting to supervisors' disciplinary actions in regard to upsafe acts," said Mr. Grimes. "Without taking the time to go into all of the ramifications of this subject, suffice to say that in general the unions accepted management's criticism as being constructive. They pointed out, however, that many of their past objections resulted because supervisors did not consistently and impartially insist on safe performance by all employes under their direction. They stated that many supervisors would go along day after day shutting their eyes to unsafe acts and even taking short-cuts themselves unsafely, then suddenly, without warning, they would discipline some employe for an unsafe practice they had permitted hundreds of times previously without action."

Outline For a Successful Industrial Safety Program

"Top management cannot sit back in their offices and expect safety to work," was repeated many times by speakers at the National Safety Congress—and these were the words of George W. Harper, associate professor of mechanical engineering, U. of Illinois, who was a featured speaker at the Pulp and Paper Section meetings of the Congress.

Mr. Harper, who is also Illinois state's superintendent of safety inspection, said there are three essentials to a successful safety program: (1), supervisory responsibility, (2), employe participation, and (3), delegated safety authority.

"Let me ask you," said Mr. Harper, "what is written on top of the investigation report which you use? Does it say 'Accident Investigation' or does it say 'Injury Investigation'? If it says 'accident' you are selling your management and employes the wrong bill of goods. You are placing emphasis on injuries and your people are calling them accidents.

"A misuse of terminology is that term 'lost time accident.' We should all be saying 'lost time injury,' because it is not the accident but the injury which causes the lost time."

Three basic causes of accidents, he said, are unsafe conditions, unsafe acts, and unsafe attitudes.

"We correct unsafe conditions by the application of safety engineering. We correct unsafe acts by training in safe practices. We improve unsafe attitudes through promotion techniques. We have three kinds of tools for accident prevention: these are engineering, training and promotion."

He listed as unsafe conditions corrected by engineering: (1) Plant layout, (2) Machine guarding, (3) Handling material, (4) Welding and cutting, (5) Electrical hazards, (6) Pressure equipment, (7) Hand and power tools, (8) Industrial health hazards, (9) Personal protective equipment, (10) Fire protection.

Training tools to correct unsafe practices, he said, are: (1) General safety rules, (2) Induction training, (3) Safety job analysis, (4) Job safety rules, (5) Job training, (6) First aid training, (7) Fire prevention training, (8) Special safety classes, (9) Foreman training, (10) Management conferences.

He listed as "tools" to change unsafe attitudes, through promotion: (1) Advertising, (2) Posters, (3) Bulletin boards, (4) Signs, (5) Stunts, (6) Contests, (7) Campaigns, (8) Certificates, (9) Plant publications, (10) Suggestion systems.

How Management Aids Safety

Byron M. Oyster, safety director for all Weyerhaeuser Timber Co. operations, moderator of one of the panels, stressed this point—management can demonstrate its genuine interest in safety by providing the safest possible equipment and replacing "old junk" with new equipment. "If an old rickety crane, for example, is a death trap, you can't expect workers to take seriously management lip service to safety."

OTHER REPORTS . . . There were many other speakers on the Pulp and Paper Section and Wood Products Section programs, there being one joint luncheon and one joint session of the two groups.

Paul L. Phillips, president of the International Brotherhood of Paper Makers, was the featured speaker at the joint luncheon. He told of cooperative efforts of labor and management to reduce accidents.

Edward Cordon, staff forester, Louisiana Forestry Commission; Robert M. Evendon, safety manager, Guy F. Atkinson Co.; H. R. Mesley, Jr., safety director, The Ruberoid Co.; Lambert Louy, safety director, Container Corp. of America, Chicago; Forrest Kimmell, safety and medical director, Sutherland Paper Co.; Robert G. Gell, of Eastman Kodak Co.; Merlin C. Race, safety engineer, St. Regis; Gordon Lemke, Employers Mutuals, Wausau, Wis.; Leonard J. Kucera, general supt., Insulite Div., M&O Paper Co.; Budwin J. Lee, Wood Conversion Co., Cloquet, Minn.; M. H. Winchester, Travelers Insurance; D. B. Chant, secy.-engineer, Ontario Pulp and Paper Makers Safety Assn.; R. W. Gray, safety director, Union Bag & Paper Corp.; J. F. Rithmuller, Lumbermen's Mutual Casualty Co., and Claire L. Lyon, employe relations mgr., Scott Paper Co., were among others participating in meetings of one section or the other.

SEE PULPWOOD SECTION FOR MORE REPORTS ON NATIONAL SAFETY CONGRESS

What's New in Automation — Pictures of New York Show Highlights

A panorama of automation through instrumentation was unveiled recently in New York City. Some 450 companies exhibited new products ranging from instruments to continuously analyze chemical streams to remote controllers. Instrument industries from Japan, England, Germany, Netherlands, Italy and France were represented. Sponsors: Instrument Society of America (ISA).

An estimated 30,000 executives visited New York's new Coliseum to learn what's new in automation. PULP & PAPER noted that scattered in the crowds were several technical men from pulp and paper companies.

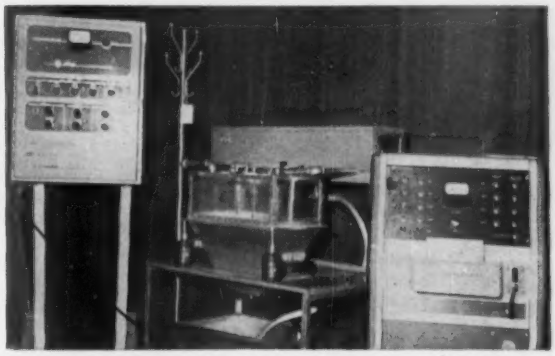
On this page, PULP & PAPER presents pictorial highlights of the 11th ISA Instrument-Automation Conference & Exhibit.

OVERCOUNTS WERE CUT from 7 to 8 sheets to less than 1 sheet at a large tissue mill using this Beckman tissue counter. Features: magnetic preset counter, no vacuum tubes, enclosed unit is tamper proof. It counts each sheet, slows equipment at a certain count and then stops it. Demonstrator is SHERWOOD "WOODY" HOLT, Design Engineer, Beckman Instruments Inc., who told PULP & PAPER this particular installation paid for itself in 3 weeks.

WHAT'S NEW AT BRISTOL—Answer: Dynamaster recording and controlling potentiometers and bridge instruments. Features: Changeability between recorder and indicator. "Just pull it out and plug in a new one." These are a complete line of small size electronic self-balancing instruments (15 can be mounted in space required for two full-size electronic recording instruments). Also new at Bristol is a new electronic recording system to measure and continuously record the draw speed on paper machines. This system uses a Dynamaster recorder which receives signals from two tachometer generators. Examining Dynamaster in picture are (l to r) HARRY E. BEANE, Vice President, Bristol Co.; C. A. ALFRED BLAKESLEE, Design Engineer, and "TINY" ISENHOUR, Union Carbide Nuclear Co., Oak Ridge, Tenn.

BRAINCHILD OF PAUL S. DICKEY, President of Bailey Meter Co., is this new recorder, receiver and controller for pneumatic and electric transmission systems. Features: One-year inking systems, close pen spacing without intermixing of records; quick chart changing by one-motion Magnetic Chart Nut and Automatic Pen Lifter.

NEW DRYER DRAINAGE PACKAGE UNITS are explained to LAMAR HARRELL (left), Instrument Supervisor, Mead Corp., Kingsport, Tenn., by HORACE P. FISHWICK (right), Mason-Neilan Division of Worthington Corp. To date, says Mr. Fishwick, close to 19 systems are on order or in operation (4 on newsprint—2 more going in soon).



FOR BULK HANDLING—these Batchatron units of Fairbanks-Morse have possibilities in pulp and paper industry. For instance, units at far left and center could conceivably handle size, alum for predetermined-amount adding to stock furnishes. Unit at right would be ideal, where a mill uses "secret" formula-furnishes, to control the Batchatron units. Only key personnel would know what formula is. Unit handles plastic electronic cards.

More About Three Rocky Mt. Mills

Ground broken for Waldorf mill . . . sawmills order barkers and chippers . . . new data on St. Regis and Rogers plans.

• Ground already has been broken for the first woodpulp mill in the Northern Rocky Mountain region of the U.S.A.

The Waldorf Paper Products 250-ton per day kraft "noodle" pulp mill near Missoula, Mont., is under construction, President Paul A. Schilling of Waldorf told PULP & PAPER in early November.

Thus, Waldorf is getting the jump on St. Regis Paper Co., which plans a 400-ton pulp and paper mill about 150 miles northwest of Missoula, near Libby, in the Kootenai National Forest. It is also ahead of the newsprint mill being planned at Silt, Colo., by J&J Rogers Co., of New York.

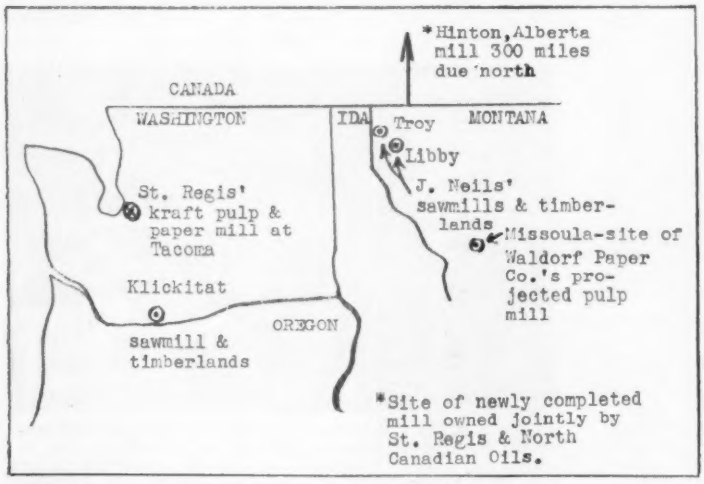
But there always has been plenty of wood available in the Rocky Mountains, so who gets the jump on who is an academic question. The problem always has been to acquire wood fiber economically, and to be able to compete in markets.

Both Waldorf and St. Regis are solving the first problem by planning to use sawmill chips. Waldorf will ship its kraft pulp in "noodle" or "nodular" form and in bales about 1,000 miles to its own board mill in St. Paul, Minn., via either Northern Pacific or Milwaukee Road. St. Regis has the Great Northern R.R. out of the northwest corner of Montana, for shipping paper, east or west. It could also ship pulp to its own mills. The closest are the Tacoma, Wash., mill, where another paper machine is in the long term planning picture, or Sartell, Minn., where there has been considerable expansion. Both are in strategic marketing locales. With its many diverse operations, coast to coast, St. Regis has plenty of flexibility in planning outlets for a Montana mill, including a market pulp sales as well as paper sales organization.

EQUIPMENT ORDERED FOR MISSOULA MILL . . . Work has begun on the Waldorf mill on a 600-acre site on the Clark Fork River, 13 miles northwest of Missoula, home of Montana State University and the U.S. Forest Service Rocky Mt. station and departments. But Waldorf will deal with lumber operators—not the Forest Service.

"We are going to have the last word in chemical recovery," Mr. Schilling told PULP & PAPER. This includes a Babcock & Wilcox recovery boiler with a B&W venturi evaporator-scrubber (fume collector) unit of latest design.

Mr. Schilling said most equipment has been ordered. The mill will be operating "within a year." He indicated some special processing is planned by Waldorf which will be non-standard. The mill is also going to have its own wood preparation plant, with barker and chipper as a reserve, in case of any temporary short supply from lumber firms.



ST. REGIS PLANS 400 TON MILL NEAR LIBBY, MONT., when the merger negotiations with J. Neils Lumber Co. are completed. Neils timberlands and sawmills are Libby and Troy, Mont., and Klickitat, Wash. New Waldorf kraft "noodle" pulp mill is being built 13 miles northwest of Missoula.

P. A. SCHILLING, president, Waldorf Paper Products Co., St. Paul, Minn.—"We have already broken ground for our 250 ton "noodle" pulp mill near Missoula, Mont." Above candid shot taken by PULP & PAPER at National Paperboard meeting where Mr. Schilling was in conversation with other industry executives.

LUMBER MILLS TO INSTALL BARKERS AND CHIPPERS . . . PULP & PAPER contacted some of the Missoula-Anaconda area lumber mills directly. They are as excited about the mill coming—first in Montana history—as is the attractive little college town itself, which lies in a mountainous 100-mi. wide belt between the top of the Bitter Root range and the high ridge of the Rockies. There are a score or more lumber mills within 100 miles of Missoula.

Although Mr. Schilling himself did not care to comment on which mills will be supplying Waldorf, direct contact with the Montana lumber people disclosed that at least 8 or more mills are immediately planning to get into the act. The great Anaconda Copper interests, which themselves own considerable timber and have for many years had their own plans for possibly making woodpulp, will be a chip supplier from their Bonner mill. Intermountain Lumber Co. and Western Montana Lumber Co. executives told PULP & PAPER they have seven sawmills, in and near Missoula, which will supply up to 60,000 chip units (equivalent to 40,000 cords) a year.

Mr. Schilling said about 50% will be fir, perhaps 30% spruce and the rest ponderosa and white pines, larch, etc. The tough fir fibers are very desirable for board.

CHANGE TO FOURDRINIER AT ST. PAUL . . . How is Waldorf going to use the added 250 tons a day? It will all go into kraft liner at St. Paul. There, a cylinder machine changeover to a Fourdrinier wet end will be a means of pushing output above present 720 tons a day capacity. Waldorf has a neutral sulfite semi-chemical woodpulp mill at St. Paul. This mill and the Montana mill will not supply all needs—it will still buy some pulp.

The lumber interests in Missoula, Bonner, Drummond and Darby, Mont., already active in the Waldorf project, are planning immediately to order barkers and chippers. Either hydraulic or mechanical barking may be used, PULP & PAPER was told.

NEILS-ST. REGIS-NEILS PROJECT . . . One of the great lumber producers of the Pacific Northwest, J. Neils Lumber Co., will soon become part of the growing St. Regis Paper Co., if negotiations underway go through. The major upshot of the transaction would be the 400-ton pulp and paper plant near Libby. As has been forecast in PULP & PAPER for many years, Montana's pulp industry is now starting to blossom. The scramble for timber for permanent, sustained operation is, of course, the reason for such deals as the St. Regis-Neils one, and geographical relationships between buyer-and-seller are no longer of great importance. The timber's the thing.

J. Neils amounts to quite a package for St. Regis. This year the production at Neils mills at Libby and Troy, Mont., and Klickitat, Wash., will amount to some 200 million bd. ft. of lumber. Annual sales of lumber plus poles and other products are $19 million. The Troy mill is just now starting up and is the latest word in sawmilling. The Neils family owns most of the company stock, which is to be exchanged on a basis of one for 2.5 of St. Regis.

The Montana lands total around 200,000 acres, up in the northwest corner of the state, while the Washington area is around 100,000 acres.

Total cost of the purchase would be in the neighborhood of $36,000,000.

THE COLORADO MILL . . . With construction expected to start momentarily, some interesting features are being revealed about the groundwood-newsprint mill of J&J Rogers Co., at Silt, Colo.

David Wollin, president, told PULP & PAPER that some $10,000,000 for outright purchases of wood has been made. In addition, equipment for the 135 ton a day mill will cost around $7,500,000.

If market conditions warrant it, he added, other paper grades may be produced and equipment is being designed to produce several grades of light and medium weights. Estimated sulfite pulp requirements (15% of newsprint furnish) will be purchased ("it doesn't make sense to build a chemical pulp mill when you're only planning to use 15% of its output," he said).

The mill site will be adjacent to the Colorado River and the Denver & Rio Grande Western Railway along U.S. Highway 6, between Glenwood Springs and Grand Junction.

Pulpwood will be drawn from vast reserves of Engelmann spruce in the White River and Routt National Forests in western Colorado. The company has purchased a stand of 275,000 acres, comprising an estimated 3,000,000 cords of spruce, all killed by the spruce budworm.

WOODPECKERS DEBARK TREES . . . A novel feature, cited by John D. Wilson, director, to PULP & PAPER is "the cheapest debarking process in the world." Some years ago, the United States Forest Service imported woodpeckers to this area. Apparently, the birds thrive on the spruce budworm and do a rather thorough job of loosening the bark from the dead trees.

The bark is still on the standing trees, but by the time the trees are felled and hauled to the mill, they are 85% to 90% bark-free.

EQUIPMENT . . . Groundwood pulping facilities will feature Black-Clawson Roberts continuous pulpwood grinders from Black-Clawson's Pandia division. Main feature of the paper mill will be a 166-in. Black-Clawson cantilever type Fourdrinier, designed for speeds up to 1,500 fpm.

Alvin H. Johnson & Co. has done the preliminary engineering and design for the new mill.

Start-up is expected in late 1957. Chief Engineer is Bernard M. Center, formerly with Parsons & Whittemore as project engineer and previously with Frederick L. Smith, a consulting pulp and paper mill engineer.

GROWTH IN ARIZONA . . . Arizona's first woodpulp mill, the Coconino Pulp and Paper Co. of Flagstaff, recently changed its name to Arizona Pulp & Paper Co. and is doubling its capital investment, adding a 75-ton newsprint plant and 35-ton Fourdrinier board mill to its groundwood pulp mill. The plant will ultimately employ almost 300 men. James M. Potter is general manager in charge of the expansion.

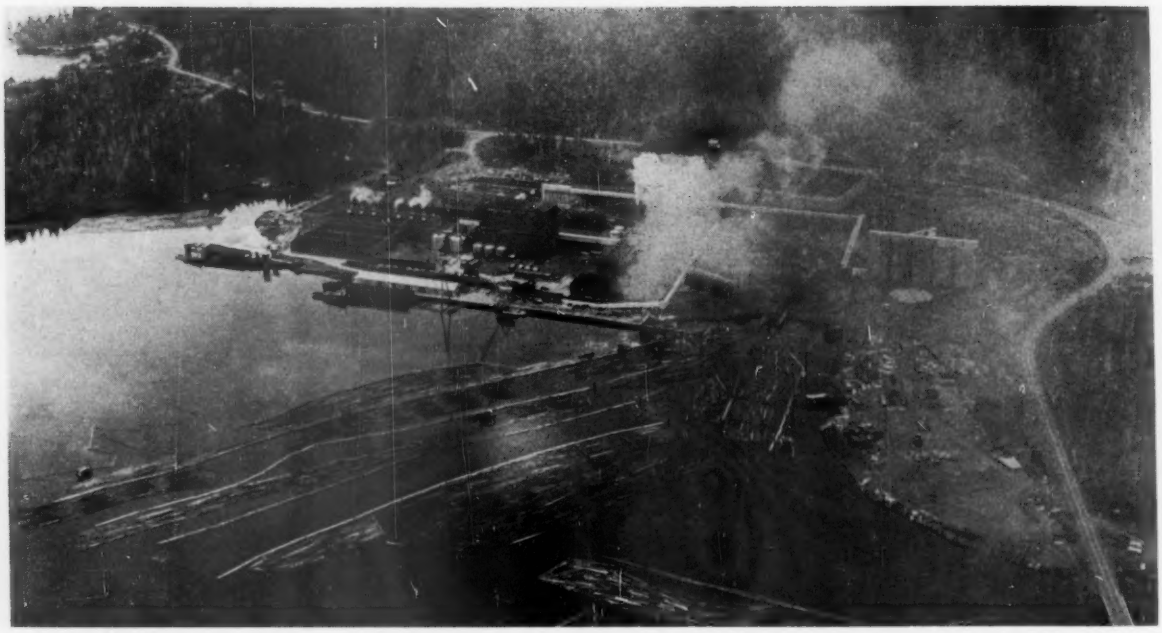
Flagstaff was the site of a Western Pine Tree Farm dedication recently during which almost 70,000 acres of private forestlands (over 50% of the private forestland in Arizona) was pledged to good forest management. Four separate ownership units comprised the total, including Southwest Lumber Mills, Inc.'s first Tree Farm. Southwest also plans a pulp and paper mill.

Geo. S. Bartons Mark 50th Wedding Anniversary

George Sumner Barton, chairman of the board of Rice Barton Corp., and Mrs. Barton celebrated their 50th wedding anniversary on Oct. 7. They are the parents of Charles Sumner Barton, president of Rice Barton. His father is 75 years old and still takes an active role in the affairs of the Worcester, Mass., company which has been headed by four generations of Bartons.

Pulp Washing is Theme For South's Pulping Conference

The two-day pulping conference at the University of Florida, Dec. 3 and 4, will be devoted to discussions on pulp washing. Representatives from both suppliers and industry will participate in the talks. Dr. William Nolan, of the Pulp and Paper Laboratory, will direct the conference.



MOST RECENT AERIAL VIEW OF THE KETCHIKAN PULP CO. is this shot by PULP & PAPER taken from light plane over Ward Cove. Rafts of logs in foreground constitute small percentage of currently available logs, many of which are beached along fringes of Tongass Narrows in background. All ships to Juneau and other southeast Alaska ports pass through the Narrows—having brief view of mill inside cove.

PULP & PAPER FIELD REPORT FROM ALASKA

What's New at Ketchikan Pulp

New type of digester lining from Sweden introduced in Alaska's first mill, now making 450 tons of pulp daily

—Ward Cove, Alaska

● What's new at Ketchikan Pulp Co., now two and one half years in operation?

A second visit by a PULP & PAPER editor to this first year-around industry in the Northlands—as they call the Territory up this way—brought forth news of many new things. But most important of all, as a new innovation in pulp manufacturing, is the successful operation of a new type of digester stainless steel lining held in place by vacuum.

Up in this American Land of the Midnight Sun, discovered by a Dane (Vitus Bering) and colonized by Russians, Ketchikan Pulp is pioneering with the first installation of its kind in all North America—a new digester dome stainless steel lining developed by Swedes. More about this later—

EXPANSION . . . A new chapter at Ketchikan Pulp has opened with a $4 million expansion and improvement program at the Ward Cove mill.

First mill in the Territory, Ketchikan Pulp has steadily increased production from 300 tons per day at its startup in mid-1954 to a current level of some 450 tons per day. Under the Forest Service timber contract, the mill is scheduled to reach 525 in 1964.

The new construction phase entails, principally, installation of a new evaporator and recovery boiler for added liquor and chemical recoveries plus one new Chicago Bridge & Iron stainless steel digester. There will also be minor equipment additions on the pulp washers plus more dryer rolls on the Rice Barton pulp dryer. The program will be completed by the end of 1957. There will be two more

AUTOMATION PAYS OFF AT KETCHIKAN . . .

For the second time in two years, a PULP & PAPER field editor recently visited the big mill at Ward Cove, Alaska, six miles north of Ketchikan, to learn how the vast territory's first year-around industry is faring. In the October 1954 issue of PULP & PAPER, the original exclusive story on Ketchikan Pulp Co. appeared, presenting detailed accounts and photographs of every phase of Alaska's unique industry.

Probably the outstanding fact about the mill is reflected in Resident Manager Vic Haner's remarks to this publication. He stated that the intricate groundwork of countless man-years of detailed planning and engineering has now begun to pay off. Automation, which was carried to practically a new high in this industry, has been the hole card at Ward Cove. (A complete section on automation at Ketchikan is in the Oct. 1954 issue).

of the new digester domes, too. Only one is in use now. Howard S. Wright Co. of Seattle is general contractor for expansion.

Evaporating capacity is being greatly increased with addition of new Swenson evaporators. A third Babcock & Wilcox red liquor recovery power boiler for the magnesia base recovery system, similar to the two original boilers, is going in.

During the last year, with 20 new dryer rolls added to the 202-in. trim Rice Barton Fourdrinier pulp drying machine, it was possible to raise production to 430 tons daily of dissolving pulp or, alternatively, 500 tons of paper pulp.

NEARLY EVERYTHING COSTS MORE IN ALASKA . . . From labor and living necessities, to supplies and equipment, costs in Alaska are higher. And when a finished product is ready for shipment to domestic markets, it already has at least a 500-mile transportation disadvantage over similar products made in, say, the Puget Sound region. These factors were in the minds of Puget Sound Pulp & Timber and American Viscose officials when they launched this joint venture eight years ago.

Resident Manager Vic Haner at Ketchikan told PULP & PAPER, "We are trying to offset the higher production cost per ton by taking advantage of the well-constructed mill and by the high degree of instrumentation. This will continue to hold true."

Lest anyone get the idea that the human element has been overlooked in the shadow of automation, Mr. Haner goes on to say, "Our supervisory personnel have been instrumental in the success of this new mill. We knew we'd face new problems and many difficult situations that are peculiar to an operation in Alaska. That is the reason we set up such a rigid screening program in choosing our supervisory personnel. It has paid off. Our people have responded wonderfully to every challenge that has sprung up. In most cases that has meant long hours and certain personal sacrifices."

NEW AIR VIEW OF KETCHIKAN, with Tongass Narrows—part of "Inland Passage" from U.S. to Alaska—in the foreground and Deer Mt. in background. Center of town is marked by the smoke of Ketchikan Spruce Mills sawmill (right center foreground). Note, two large 12-story apartment buildings in left foreground built for pulp mill workers. In this area a new development in town has occurred.

PULP & PAPER'S FIRST AIR VIEW OF KETCHIKAN PULP'S WATER SUPPLY is this staff photo of Lake Connell, 3½ miles uphill from Ward Cove. This man-made lake stands behind the 85-ft. high dam and stores water from higher mountain lakes. Water for treatment plant is drawn from the level of the lake with the least color and turbidity. Over 13 sq. mi. watershed above this dam is much heavy timber and muskeg swamp, causing high color.

Story of New Type Corrosion-Resistant Digester Linings

The new dome lining, originally developed in Sweden, was cut, preshaped and installed by Alaskan Copper Works in Seattle. Two more such domes are contemplated and were being prepared in the Seattle shops this fall.

While these linings are not regularly produced, due to the fact they are so new in this country, Alaska Copper Works has been granted the right to fabricate them by the originating mill, Kopparfors Aktiebolag in Sweden.

The dome linings are fabricated in "orange-peel" sections and shipped to the site. There they are lowered separately through the digester dome opening and welded in place inside the digester.

This innovation has been used for a number of years at the Kopparfors pulp mill in Ockelbo, Sweden. Up until Ketchikan Pulp's adoption of the new lining, it had been "under wraps" by the Swedish organization.

The shaped stainless plates, inside the steel shell are lap welded together. But the attachment to the steel shell itself is at the digester openings only. The lining envelope is held in place by means of vacuum between it and the steel shell. A lining of this type recently installed in the dome of one of the digesters at Ward Cove and, according to mill officials, is working very satisfactorily.

Between 1946 and 1947, seven Swedish digesters were thus lined with stainless sheets. After some years of good operation, patent protection was sought. In Sweden, digesters are fully lined this way, with vacuum pulled for the entire space—top to bottom. The process is covered by Swedish patents and by U. S. Patent 2,694,632 to Holgersson, et al. Since issue of the patents, several other Swedish digesters have been vacuum lined and some additional

FIRST STEP–FRICTION SAWING. First step in fabrication of stainless steel dome lining sections is the laying out of patterns and cutting out of individual pieces. Work done in Alaskan Copper Works shop is under Foreman TED SCRIBOR (left) and Production Foreman WALTER SANDERS (not shown).

SOON TO BE "ORANGE PEEL" . . . When this sheet of extra low carbon stainless steel is cut according to pattern with this high speed friction saw, it will be shaped in a giant hydraulic press. Final section resembling the peeling on an orange segment will be shipped to Ketchikan for final welding installation inside digester dome.

ones are scheduled there as soon as lining replacement is needed.

HOW LINING IS FABRICATED . . . The new stainless steel domes call for two specialized operations: One is the pre-fabrication of the components in a stainless steel fabricating shop and the other is the placement and welding of the pieces inside the digester.

For this mill, the fabrication, done in the shop of Alaskan Copper Works in Seattle, utilized Type 317 extra low carbon 9 U.S. gauge stainless steel. It was supplied by Eastern Stainless Steel Corp. of Baltimore, Md. There are 19 pieces in all which make up the dome liner, and these are all cut and preformed to exact size and shape in the shop and then shipped to the job.

It is important during forming to keep cold work at a minimum. The metal is pressed into shape and hammer work is practically eliminated. Thus, no undue stresses are set up in the pieces that might cause trouble later on in the cooking.

HOW LINING IS INSTALLED . . . For getting the pieces into the digester, there are two methods. One is to lower them through the top opening of the digester (used at Ketchikan); the other is to cut a slot in the side of the digester. The slot occupies about 60° of the digester circumference. If the slot method is used, there is the problem of re-welding and stress relieving the digester wall.

Reason for the slotted entry is that most of the pieces are too large to get in otherwise. Smaller pieces capable of passing through the top opening would require more welded seams, and that, of course, is what should be avoided, because the fewer the seams the better the lining job.

The dome lining itself is composed of "orange peel" sections radiating from the top, down past the knuckle of the digester dome. A crew of up to four men works inside, with proper ventilation and safety precautions. The scaffold or other equipment normally used by the mill for interior digester work suffices for the crew's platform. The consumable electrode arc welders use inert argon gas, the electrode being a continuous coil of wire made of 317 extra low carbon stainless steel. ELC stainless is used because it minimizes the carbide precipitation adjacent to the weld bead.

The sections are joined together with lap welded joints. There is a series of expansion joints to allow movement of the liner around such projections into the digester as thermometer pockets, inspection ports and other instruments. At the top of the dome, the liner is welded solid. First a ring of plug welds is put on to attach the anchorage firmly to the mild steel digester; finally a sealing weld of stainless is applied. The final weld provides the necessary vacuum tightness.

NO LEAKS WANTED HERE . . . The vacuum would dissipate if there were leaks, so a test for leakage is important. This consists of filling the digester up with water (or soap-sudsy

REMOVES TONS OF WATER FROM BARK . . . These Defibrator Bark Presses made by American Defibrator, Inc., are a success in dewatering bark particles destined for Ketchikan Pulp's Babcock & Wilcox power boiler. Part of second bark press is seen on right. Both machines are powered by Westinghouse 100 hp 440 volt AC induction motors connected by nine rubber v-belts to Pacific Western D-60 gear reducers, which rotate 17 in. diameter screw via Falk couplings.

water) and then exerting a slight back pressure. (This works just the opposite to the vacuum.) The leaks will readily show up, and further welding can be accomplished to make a perfect seal while the installation crews are still handy.

A vacuum pump, pumping through a vacuum header, is used to pull a vacuum between the lining and the digester proper. The purpose of the header is to hold the lining in place, in case of a power failure.

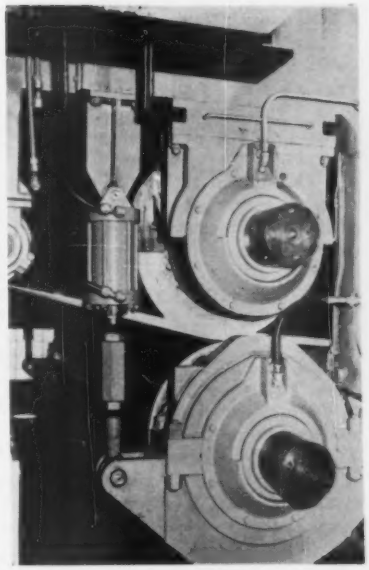
Digester cooking time has remained close to the original plan; they are getting a cook off every 65 minutes with the 6 A. O. Smith stainless steel clad digesters.

This is the second mill in the world to use the magnesia base sulfite cooking and recovery cycle and first one to be originally built for this MgO process. The digesters sit right on top of dump chests. Babcock & Wilcox provided MgO recovery boilers and also two power boilers.

Continuous bleaching at Ketchikan, completely automatic, takes 8 hours and is done in 6 stages with varying quantities of chlorine, caustic and bleach liquor according to pulp grades desired. Ketchikan's own bleach liquor is produced at a rate of 80 gpm.

Other Major Processes New Developments at Ketchikan

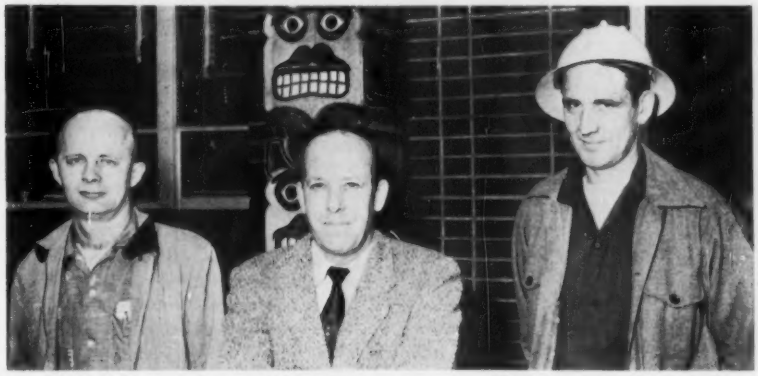
Other major processes at Ketchikan, previously reported, include the Sumner hydraulic log barker—the "cradle" type first developed by the Puget Pulp mill in Bellingham, which takes 20 ft. logs—and the Sumner 6-knife 153-in. chipper taking logs up to 30 in. diameter. Sulfur from Wyoming and Texas is burned, vaporized and made into cooking acid at the rate of 350 gpm. Lindblad screens and over 500 Bauer Centri-Cleaners remove dirt particles. Two American Defibrator bark presses (see picture) are being successfully used to dewater bark for the Babcock & Wilcox power boiler.



DESIGNED FOR 1,000 TONS PRESSURE . . . Third section press rolls on the 202-in. trim Rice Barton pulp drying machine. Unusual rolls were built by United Engineering. Each roll is 30 tons, among largest ever built. Hydraulic valves apply pressure.

HEAD MAN AT KETCHIKAN . . . LAWSON P. TURCOTTE, President of Ketchikan Pulp Co. and also President of Puget Sound Pulp & Timber Co. He has been intimately involved in the founding of the Alaska firm and in affairs of Puget Pulp for 35 years.

IN CHARGE OF OPERATIONS AND PLANNING . . . VIC HANER (left), Resident Mgr. of Ketchikan Pulp Co. since its creation and former Plant Engineer at Puget Pulp, and ERIK EKHOLM (right), Vice President of both companies and in charge of organization and overall planning for the Alaska venture.



CHANGES IN KEY PERSONNEL . . . Changes in mill's supervisory staff came as a result of death of CARL RIES, Plant Engineer. Moved up into this position was JIM FINSEN (center), former master mechanic. MARION KEYES (right) ex-Chief Electrician is new Master Mechanic. BOB ZACHARY (left). ex-Asst. Chief Electrician succeeded him as Chief Electrician.

Rolls of dissolving pulp, 16 tons each, or 400 lb. bales of paper pulp are end products. Boxcars loaded in the plant go by barge to Prince Rupert, B.C., and east by rail. Some pulp is loaded in ships for foreign or domestic ports. Barges designed for 20-car capacity are used, bringing in chemicals and taking out pulp.

CHANGE IN CHEMICALS FOR WATER TREATMENT . . . The Ketchikan mill uses 30,000,000 gals. of high quality treated water and another 14,000,000 gals. untreated every day. For dissolving pulp, low metals, low color and low hardness are required. The elaborate Northwest Filter Co. treatment plant, entirely automatic, requiring only one operator, on day shift only, was fully described in our Oct. 1954 issue.

But since the startup there has been a change in chemicals usage. For several months treatment was made with lime and alum. This produced adequate water in all respects except calcium hardness was high. Sodium aluminate and alum treatment was tried with excellent results and aluminate has been in use since that time. Aluminate and alum treatment has been easy to control, easy to feed and the cost is essentially the same as for lime and alum treatment, said

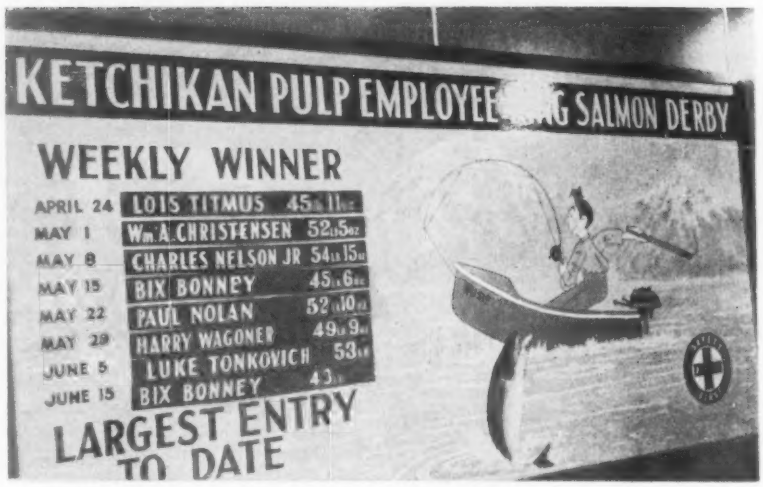
the Ketchikan staff.

Ketchikan's watershed is mostly covered with heavy timber and muskeg swamps, so organic coloring is high, 30 to 60 ppm. Average rainfall at Ketchikan is 150 in. per year and in summer there is some snow runoff. Throughout the mill all water is carried in stainless steel to avoid iron pickup. Use of stainless steel is very extensive throughout the mill.

LIVING CONDITIONS . . . Discussing one of the major problems for any new mill going into Alaska, that of living conditions in a new town, Mr. Haner believes the picture is getting brighter all the time. He states, "Life in the small Alaska towns will appeal to people who want to help build a stable community. Especially anybody interested in outdoor life, hunting and fishing for recreation, will like it here and be just as happy as in the States. Take Ketchikan—the schools here are just as good or better than the average schools in the States. Ketchikan has a new multi-million dollar high school."

"The living cost situation is improving all the time," Mr. Haner stated. "There has been a favorable effect of the pulp mill and its people on community living. Mill people have added to the stability of the town and its cultural aspects. Ketchikan has had a healthy growth. Mill people are active in the Chamber of Commerce and civic clubs.

"What we are trying to do here is to build up the community and stabilize it. Community leaders have been a big help in getting our industry going successfully."



KING SALMON OUTPUT of Ketchikan Pulp Co. employes does not quite match pulp production but fishermen everywhere can envy the fine catches accorded to KP Co.'s salmon derby winners. Eight fish listed on this big board average just under 50 lbs. each. The biggest one—54 lbs. 15 oz.

Effluent Abatement Progress in Far West

Technical progress in effluent control and abatement keynoted the recent annual meeting of National Council For Stream Improvement—Western Membership at Portland, Ore. Investigation is under way to establish a product identification-evaluation study of atmospheric problems and select the most suitable Pacific Coast school at which to carry on the study, according to Exec. Secy. Russell L. Winget.

KEY PARTICIPANTS IN STREAM IMPROVEMENT SESSION. (l to r) Exec. Secy. RUSSELL L. WINGET, National Council for Stream Improvement, FRED WELEBER, Chief Chemist of Publishers' Paper Co., re-elected Chairman of Western Membership, F. O. BOYLON, Resident Manager of Crown Z's Camas Mill, elected Vice Chairman.

The session, headed by Chairman Fred Weleber, of Publishers' Paper Co., disclosed that the aquatic biology studies established 10 years ago at Oregon State College have become among the most important in the country. Data developed here have resulted in better physiological understanding of important fishes. The work will now be expanded to include marine organisms, particularly oysters, for which a proposed method of waste-control study is nearly completed. An additional $5,000 was allotted for the expansion. Besides, the National Council is increasing its West Coast staff by an additional full-time and one part-time graduate student.

The Council, through its West Coast resident engineer, A. F. Goudy, Jr., will continue the slime research project at OSC and prepare an engineering study for a pilot plant to produce high protein feed from spent sulfite liquor in quantities sufficient to conduct animal feed studies.

Harry W. Gehm, the Council's technical advisor, reported that biological oxidation (activated sludge method) now appears to be the most promising means of purifying pulp and paper mill effluents in areas where sufficient adaptable land is unavailable or climate unsuitable for natural oxidation processes.

"At one time," he points out, "this method seemed the least adaptable to the problem." He stated today's evaluation of a new mill site necessitates "considering the disposition of spent process waters on the same plane as the availability of raw materials, transportation, and other utilities required for profitable manufacturing."

Emphasizing the extent of progress, the chairman of Council's Board of Governors, George E. Dyke, president of Robert Gair Co., Inc., stated that although the industry has practically doubled its output during the past decade, this was accomplished while maintaining status quo on contributing effluents to waters and atmosphere.

That considerable objectivity has been incorporated into the attitude toward industry in California during the past two years was indicated in a report presented by V. W. Bacon, executive officer of the state's Water Pollution Control Board. He said this resulted from recognizing the need for dispassionate studies made without relationship to any one company. His organization is now determining the allowable waste assimilating capacity of streams in Northern California—a region where new mills are planned and calculations indicate sustained raw product capacity for producing over 250,000 tons of pulp annually.

SPECIAL REPORT ON SOME BOSTON CONFERENCE HIGHLIGHTS

Significant Engineering Developments

- Misapplication of motors—why they happen.
- Reasonable approach to mill regulating systems.
- Location and causes of motor failures.
- A new development—the paper tensiometer.
- Guides to watch in steam plant modernization.
- New light on kraft mill digester corrosion causes.

BY M. J. OSBORNE

Chairman, TAPPI Electrical Engineering Committee and Electrical Supt., Bowaters Southern Paper Corp.

• New data which had not been readily available to paper industry engineers was brought out in papers presented at the 11th Annual TAPPI Engineering Conference in Boston.

Considerable enthusiasm had been built up among both electrical and power plant engineers for the program. Both the electrical engineering and steam and power committees have had very active years. The electrical engineering papers, "A.C. Motor Duty Cycles" and "Performance of Regulating Systems," were important because of new information.

The lack of the a.c. motor data, coupled with limited knowledge of the subject, has resulted in many motor misapplications in the paper industry. Motors have been applied without regard to the frequency of starting or the stored energy of the driven equipment, and many motors have failed as a consequence. Because of the lack of common terminology, regulated drives or systems have been bought without specifying performance limits or by using a philosophy of "the best is none too good!" This philosophy is usually made without regard for cost or complexity.

A.C. MOTOR DUTY CYCLE—by Ray W. Foster, Champion Paper & Fibre Co., Canton, N. C.

To avoid misapplication of induction motors to drives, the paper mill engineer must see that certain design and performance characteristics of the motor are related to the duty cycle of the drive.

When the loads to which a motor is subjected follow a fixed repetitive pattern over a given period of time, the expression of that pattern is the duty cycle. Some motors are subject to varying loads while running continuously while others must accelerate or plug reverse frequently perhaps under heavy inertia loads. Such duty cycles are classified as severe because of the heat load they place on the drive motor. When designing for severe duty cycles, the engineer must consider this additional factor of heating or face possible burnout of stator winding or rotor failure.

If the inertia of the driven machine load exceeds that of the motor rotor, if the machine is to be started as frequently as once a minute, if the stopping time is limited, or if load varies widely though motor is running continuously, the designer should be consulted or a close check made to see that proper motor is being applied.

Some of the drives in a paper mill which require special consideration are: 1, induced and forced draft fans, 2, chippers, 3, centrifuges, 4, air compressors, 5, log conveyors, 6, chip feeders, 7, barking drums, 8, Hydrapulpers, 9, beaters and 10, hydraulic presses.

High Inertia Loads . . . When applying large squirrel-cage motors to high inertia loads, some analysis is involved to determine whether a motor will have sufficient thermal capacity to dissipate energy losses while bringing the load up to speed. High load WK^2 values for fans, chippers, air compressors, and centrifuges, usually require a longer-than-normal time for acceleration.

The time required to accelerate a given drive is:

$$t = \frac{WK^2 \times RPM}{307.5 \times Ta}$$

where t equals time in seconds: WK^2 equals inertia of the driven machine and the motor in lb-ft.^{2} Ta—equals average torque in ft.lb.

M. J. (JOHNNY) OSBORNE

Johnny Osborne Views Of Boston Highlights

Periodically, for several years now, M. J. (Johnny) Osborne has been summing up and commenting critically upon new developments in electrical and steam and power engineering for PULP & PAPER readers.

His opinions are his own; his evaluations are arrived at quite independently.

But many of our readers have become accustomed now to looking for his views on these and kindred developments; they have told us as much. So we proudly present Mr. Osborne's comments on highlights, from his point of view, of the recent TAPPI Engineering Conference in Boston.

A native of Florida, Mr. Osborne graduated from Georgia Tech in 1944. He was with the Atomic Energy Commission at Oak Ridge, Tenn., then on turbo-electric tankers in the war, and has been electrical superintendent at Crossett Paper Mills and more recently at Bowaters Southern Paper Corp.

available for acceleration of inertia, which is equal to motor torque less torque required by actual load on the driven machine.

RPM—equals motor speed at full load.

If the load speed is different from motor speed then the equivalent load WK^2 at the motor is equal to (load speed/motor speed) ^{2}X WK^2.

Starting time varies widely for a given motor, depending on value of WK^2 of the driven machine. Using full voltage starting, starting time may be as low as 3 to 5 sec. for such drives as M-G sets and centrifugal pumps with discharge valve shut. At the other extreme are drives such as fans, chippers, compressors and centrifuges which may require 40 sec. or more to accelerate to full speed.

A starting time of up to 15 to 20 sec. is considered permissible for standard squirrel-cage motors, while periods exceeding 20 sec. may require special construction.

The shorter starting time of high torque motors reduces stator heating, since the stator carries a somewhat lower starting current for a shorter time; however, heating of the cage winding due to acceleration of load inertia is **not** reduced. **The energy which must be absorbed by and dissipated from the cage winding because of load inertia acceleration equals the kinetic energy stored in all of the rotating parts at full speed and is independent of time.** A shorter starting time helps only in reducing cage winding losses due to load friction.

To accelerate a system, motor torque must exceed load torque. The difference in magnitude between motor and load torques accelerates the load almost to motor synchronous speed. If load torque is equal to motor torque at any speed less than rated speed, then the motor will be unable to accelerate the load beyond that point, and the motor will run at that speed. Should the load torque curve closely approach the motor torque over a portion of the operating speed range, the machine will accelerate very slowly or stall for that portion of the curve. This can cause motor overheating.

If a motor is started without load or connected inertia, the average loss during the starting period is 8 to 10 times the full load running loss of the motor. When the motor is connected to a mechanical system with negligible friction load, the losses further increase by the ratio of the connected inertia (referred to the motor) to the rotor inertia.

Fully Automatic Paper Mill is In Sight

In the Nov. issue of PULP & PAPER (p. 60) is a special report on one of the major developments at the Engineering Conference in Boston. MARVIN M. GADE (left) and GARNET M. EASTWOOD (right) were co-authors of the paper. It told how a completely automatic centralized graphic panel control is providing a smooth startup in just 7 minutes for the entire wet end of No. 4 (234 in.) Fourdrinier machine at Spruce Falls Power & Paper Co., Kapuskasing, Ont. It saves much climbing up and down to set gauges, open valves, etc. Now it is being duplicated on "Kap's" No. 3 machine. Mr. Eastwood said this means "one of several plateaus" have been reached on the way to the completely automatic pushbutton mill. Many engineers present agreed the automatic mill is now "a sure thing."

To simplify the problem of applying standard squirrel-cage motors rated 200 hp and larger to marginal high inertia loads, NEMA standards indicate the maximum load WK^2 of machines to which standard motors can be applied. These values are based on industry-wide experience and design practice.

The number of successive starts is definitely limited. If a motor is subjected to repeated starts without sufficient time intervals to allow the motor to return to rated normal operating temperatures, the heating effect would be cumulative and could prove destructive. Even though the motor does not fail at once, the stator coil insulation will be permanently weakened by over temperature and rotor bars and end rings will fatigue under expansion and contraction strains.

For applications requiring special motors because of abnormal inertia conditions, wound rotor motors deserve consideration.

Reduced Voltage Starting . . . The torque of an induction motor varies directly as the square of the applied voltage. When reduced voltage starting is used, it is very important that the load characteristics be known so that sufficient torque margin is assured. Experience indicates that prolonged acceleration has a much more destructive effect upon the stator winding than rapid acceleration. For this reason it has appeared at times that reduced voltage starting with greatly increased accelerating time has done more harm than good to the stator winding.

Cyclic Starting . . . Successive starting of a motor, even though high inertia loads are not involved, can be serious. Each start releases energy in the rotor winding of the motor equal to the stored mechanical energy in the motor and load combined. This energy loss released in the rotor winding will increase its temperature at a rate depending upon the amount of material in the rotor, the specific heat of the material in the winding and the degree of conduction of heat from the lamination structure in which it is embedded. The maximum inertia load that a motor can accelerate or the number of times it can accelerate a given load successively will therefore depend on these factors and the temperature value which is considered limiting for safety of the rotor winding.

Types of Calculations . . . The mechanics of duty cycle calculations are sharply defined by the two methods normally employed—the root mean square method commonly referred to as the **RMS** method; and the thermal balance method known commonly by

the term **Watts-loss** method. Both methods seek a thermal balance for the motor whereby, even though subjected to varying loads, some greater than its rated capacity, it will operate at an average temperature rise equal to or below the value specified for the insulation.

The data in Ray Foster's paper and the methods for the selection of a.c. motors to suit the duty cycle will be made into TAPPI data sheets. These will be most valuable to electrical and mechanical engineers in the industry. It is only the mill engineers who are familiar with the conditions of starting, friction and inertias.

Mr. Foster could add a footnote to his paper that friction can have an equivalent inertia ten times greater than the actual WK^2. An example of the equivalent value of friction was illustrated at one mill and was caused by bark dust on the chains of a barking drum. This extra friction brought the motor accelerating time from 2 to 9 secs.

PERFORMANCE OF REGULATING SYSTEMS—prepared by G. E. Shaad, General Electric Co.

Regulated drive systems and automatic systems of process control in the paper industry have received increasing prominence as a result of higher accuracy and speed requirements of production equipment. System performance has become an important factor to the mill engineer. Accuracy requirements, definitions of the various types of accuracies and definitions of system components are required to provide a common plane for discussion.

Regulating systems have two general types of performance. These are: (1) Steady state regulation, (2) Transient regulation.

The most commonly specified and discussed performance factors are those that apply to the steady state performance. These factors are relatively easy to calculate, measure, and guarantee and if they are properly interpreted they can provide a reasonable picture of the expected system operation. Steady state deviations include those due to a specified load change or other specified change over a specified range of the controlled variable. Steady state deviations also include drift which is a long time change in system error due to causes other than load change.

The transient performance of regulating systems presents a much more difficult and complex picture. Transient deviations occur with the sudden application of load, changes in power supply voltage or frequency, instantaneous changes in references, or time rate changes of reference. The definitions of the various terms encountered with transient regulation are of particular interest and importance. While some of these definitions sound like legal "gobbledygook" the terminology is necessary to tie down the specific point that is being defined.

It must be noted that the terms themselves do not define the operating conditions or the values that may be involved. It is necessary on each application to specify the exact conditions of operation, the amount of disturbance or step function or rate function, etc. before any guarantee of performance can be made. In general, it is not possible to tie down the exact operating conditions for there are usually many unknown factors such as backlash in gear trains, head loss in piping, exact storage capacities, inertias or friction loading. As a result, transient performance is seldom guaranteed on industrial applications such as in a paper mill.

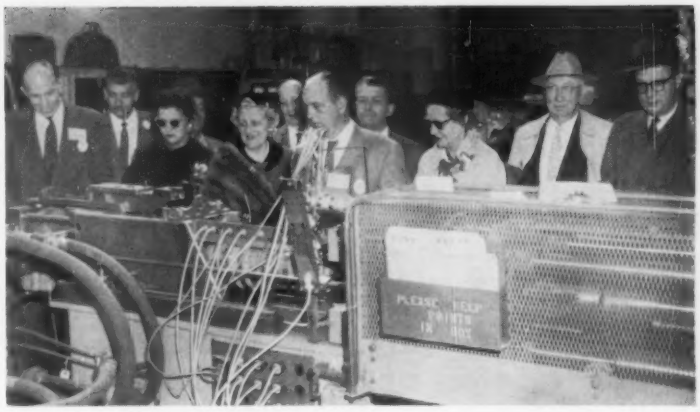
The mill engineer is presented with an interesting problem where transient system performance is important. "How can you predict the system performance when there are unknown factors that will affect it?" There are several ways this can be accomplished within reasonable limits.

One of the simplest and most satisfactory is actual measurement of transient and/or steady state performance of a similar system. A chart was exhibited of actual sheet tension on a regenerative braking winder during acceleration and deceleration of the winder. Such measurement on one winder gives reasonable assurance of equivalent performance on another. In a similar way, expected performance of many systems can be estimated.

A second and complex method is the mathematical calculation of the expected system performance; however, where portions must be estimated or are difficult to simulate by mathematical formulae the calculations can be very long and very involved and results are not satisfactory.

A third method that has come into wide usage during the past few years is somewhat of a cross between the first two methods. The use of analog computor techniques to predict system performance is increasing rapidly and the results have been most satisfactory. The analog computor operates on the basis of simulating system characteristics of inertia, friction, etc. with small computor elements of rheostats, capacitors, etc. When all of the system elements have been so simulated, curves of expected system operation can be rapidly run off for many operating conditions.

This method still requires the setting up of formulae that express the performance of the system components. In some cases, however, the actual system components can be used in conjunction with the computor. The ability to use actual elements plus speed of operation make the computor adaptable to studying many systems otherwise impractical.



A Lot of Engineering Talent Here

After the Engineering Conference in Boston, a bus tour was made to Nashua, N.H., for tour of Improved Machinery Inc. Here a group is looking over an Impco plastic molding machine. Left to right: DAVE ROBERTS, Plant Engineer, St. Regis Paper Co., Jacksonville, Fla.; B. B. PIERCE, Chief Engineer, Gaylord Corp., Bogalusa; MRS. RAY GREENICH, wife of Plant Engineer, International Paper Co., Bastrop, La.; AL WILSON, Editor, PULP & PAPER (behind her); MRS. and MR. CHARLES L. SIBLER, Chief Engineer, West Virginia Pulp and Paper Co.; RAY GREENICH, IP, Bastrop; WILLIAM COKER, Plant Engineer, Franklin, Va. mill of Union Bag-Camp Mfg.; MRS. COKER; WALTER L. BARKER, Chairman of Board, Impco; and KEPPLE PRATT, Gen. Supt., St. Regis Paper Co., Tacoma, Wash.

A Major Question Remains . . . Only Mill Engineers Can Answer . . . Although the expected performance can be estimated by various means, there is still a major question: "How good does the system need to be?" In many cases this is an unknown and so it is a human reaction to specify system performance better than the process can possibly require. This in turn has two results; the equipment will be expensive and complex. Both should be avoided wherever possible. Added capital investment means continued investment charges and added complexity means added maintenance expense.

This problem of "How good?" can only be answered by mill engineers. Suppliers of equipment can discuss advantages and disadvantages, can help measure existing system operation, can suggest inspection of similar installations, and help in other ways, but they cannot guarantee production except in those few cases where they have complete control of system, machine, installation, and operation.

To arrive at a reasonable answer, the plant engineer will find it helpful to: 1, review the operating functions that are desired and divide them into "essential functions" and "desirable functions," 2, review operating conditions with respect to load changes, control of operation by machine operators, time of operation, and the importance of operation to plant production, and 3, estimate the minimum system performance that could be acceptable under expected operating conditions.

There are unfortunately too many areas where there is not sufficient background to properly estimate the "minimum acceptable system performance" in regard to all performance factors involved. Nevertheless, detailed consideration of the expected operating conditions will place the emphasis on the critical performance points. It is in this group of applications that the philosophy of "the best is none too good" presents an easy out. Such a philosophy however, must not be used without consideration of associated process errors and their effect upon the resultant product. After a point the increased cost and complication cannot be justified.

In this area of the "unknown required performance," a large question often should be raised: "Do we need regulation or instrumentation?" Accurate measurement with adequate recording instruments and operating records may be much more important than the precise regulation of a single quantity. In such cases, it is often possible to design the system for the desired functions with a minimum of expected performance but with provision for future modification for increased performance if required.

Since each application of an electric, pneumatic, or hydraulic regulating system represents an individual problem in performance, economics, and maintenance, there are very few general rules that can be universally applied. These few, however, should be kept in mind.

1. System performance is a function of **all** system components.
2. Operating conditions and functions must be considered before the system performance can be specified.
3. Increased system performance means increased cost and increased complexity.
4. Instrumentation should be a counterpart to regulation.

With these four points in mind a realistic approach can be made to any mill regulating problem.

Data and definitions in George Shaad's paper are being prepared in data sheet form and will be submitted to the electrical engineering committee.

LOCATION AND CAUSES OF MOTOR FAILURES . . . One of the electrical highlights of the conference was this discussion, the first part of the work of TAPPI Project No. 468 and dealt with electrical failures of motors. The next part of this sub-committee work will deal with mechanical failure of motors. I. M. Witham is sub-committee chairman and panel moderator.

The prepared discussion was in three parts: "Commutation," "Insulation," and "Control."

PART I—COMMUTATION—by D. E. Bivins, Olin Mathieson Chemical Corp., Monroe, La.

Dan Bivins has had a wealth of experience with operation of d.c. machines at the paper mills in Monroe. He read an excellent paper on the subject at the TAPPI Engineering Conference at Houston in 1955. (Refer to "TAPPI," Vol. 39, No. 5.)

"We believe that the majority of armature winding failures are caused by materials associated with commutation such as graphite and copper particles which work into the armature and ultimately cause shorts or grounds in the windings."

Armature winding failures can be separated into three categories: opens, shorts, and grounds. Shorts or short circuits can be classified as shorts between turns of coils and shorts between coils.

Usually with open armature circuits the shutdown is not immediate, but is indicated by violent sparking of the brushes. If the machine is not shut down, the commutator soon will be badly damaged. Damage is usually badly burned bars. Most damage is to bars connected to the open coil and less damage to bars which are one path of multiple parallel paths. In

FRIENDS MEET AT BOSTON. . . . (Left to right) JACK FROST, Master Mechanic, Macon (Ga.) Kraft Co., NAT P. WARDWELL, President of Carthage N.Y., and ROBERT SMYTHE, of Ray Smythe Co., Portland, Ore., which represents Carthage in the Far West.

Nat P. Wardwell Becomes Carthage Machine Co. President

Nat P. Wardwell has succeeded his father, the late Addison Wardwell, as president of Carthage Machine Co., Carthage, N.Y., manufacturers of barkers, chippers and mill equipment.

Nat Wardwell, who is 51, was born in Watertown, N.Y., near Carthage. He was in the class of 1927 at Yale University, where he attended Sheffield Scientific School. He has traveled from coast to coast in representing the Carthage Machine Co., visiting countless mills over the years.

The elder Wardwell founded Carthage Machine Co. He was 80 years old when he died.

armatures where there are many multiple circuits the opens are sometimes difficult to locate. An inspection of each burned bar will usually lead to the open. Except in rare instances the open will be found to be in a connection of the commutator riser to the coil. A poor soldering job is the cause. In smaller armatures where there are no risers the open would be found where the coil is soldered to the commutator bar. The cause is also poor soldering. Most mills have electronic armature testers, valuable in locatings and shorts.

In the case of shorted armature coils, where there are failures between turns in a coil, the coil will immediately become hot and be indicated by smoke. The heat is caused by the circulating current. When the machine is shut down the coil will be located by the blistered appearance of the varnish and insulation. If the short is in the winding and not at risers or between commutator bars, the entire armature must be rewound. Short circuited turns are not very common. Out of 102 failures Mr. Bivins has seen only one case of turn to turn failures.

Short circuits between coils are, in his opinion, the cause of most armature failures. Mr. Bivins has carefully inspected 102 armature failures in 20 years; all but two armatures failed in exactly the same manner and exactly the same place. These failures occurred as a coil to coil short in the bottom layer of coils two or three inches behind the commutator risers. The short circuit spread, burning a hole through adjacent coils and frequently up through the top layer of coils, at the same time burning the band. In some cases the rotating damaged band becomes entangled in brush holders and field coils and extends the damage.

Investigation of these failures has shown that they are caused by graphite or carbon particles with other materials such as worn copper from the commutator adhering to the underside of coils. The difference in potential of commutator bars or risers which are bare, causes a creepage current to follow the path of the graphite deposits on the coils etching a semicircular path. This leakage current finally burns a small path through the coil insulation to the bare conductors, establishing an arc between the coils resulting in a coil to coil short circuit. Unfortunately these carbon deposits on the coils do not yield readily to blowing or cleaning with compressed air.

Service and repair shops have recognized this problem and are turning out rewind jobs with the commutator risers sealed with compound in an effort to keep the deposits out of the windings. There is evidence that with the risers sealed and the air flow from the pulley end towards the commutator end there is definite progress in eliminating the deposits.

Most armature grounds occur in the same manner that the conductive path on the coil surface extends from the commutator risers to the laminations of the core. The same difficulty in removing deposits exists.

PART II—INSULATION—by K. P. Grenfell, General Electric Co., Schenectady, N.Y.

When a paper mill electric motor shuts down because of an insulation failure, considerable abuse is directed at electric personnel, electric machinery in general and the manufacturer in particular. It is often found that the failure could have been prevented.

A suitable yet economical motor for this industry presents quite a challenge to designers.

Motor current-carrying conductors must lie in close proximity to the iron of the magnetic path and to each other. Each conductor thus must be surrounded by insulating material to prevent leakage of power to ground or short circuits between wires. The layer of insulation should be thin to efficiently conduct heat, tough to withstand puncture and must not crack from repeated deflection during load changes or frequent starts. The insulation must stand up under long exposure to high temperatures and withstand voltage surges far in excess of rated line voltage.

The surroundings in which a motor operates figure importantly in insulation life. Almost all motor insulating materials absorb water in varying amounts.

Water containing impurities, such as the various salts, becomes a good conductor. The average mill will use more water as make-up than a medium-sized city. This water is boiled, pumped, sprayed and splashed over most mill areas. Chemicals such as salt cake are added to the water in the cooking and washing or by release into the air. Wet and salty insulation may start a cycle by passing small leakage currents to ground. A vicious and rapid cycle of deterioration and increasing current results until a fault occurs. An accumulation of dust lying on an insulating surface can retain splashed or condensed moisture like blotting paper. This coating also impedes disposal of heat from the motor. Dust and moisture are familiar elements in a mill.

Heat is the most common enemy of insulation. Every 10° C. increase in the operating temperature will divide the insulation life by two. High temperature causes all cellulose materials such as cotton or fiber to become brittle, to crack and shrink under vibration and stress, causing ultimate disintegration of the coating. The shrinkage causes coils to loosen and increases abrasion.

Properties of insulation of importance in motor service fall into three categories:

(1) **Electrical:** The ability to maintain an insulating barrier. This is measured in terms of "dielectric strength" or the amount of voltage that can be withstood for a set time without puncture. Other measuring sticks are insulation resistance, and insulation power factor. Other electrical properties of importance include corona resistance and surface arc resistance.

(2) **Thermal and mechanical:** These properties are heat conductivity, deterioration from heat, flexibility, resiliency, and fatigue resistance, abrasion resistance, shrinkage and bonding strength.

(3) **Chemical properties:** Resistance to water, salt, oils, acids, alkalis, solvents, flammability and deterioration from heat.

Mylar and Permafil are Useful . . . Mylar, the new synthetic being widely used for slot liners and form-wound coil jacketing, deserves mention of special details. Toughness is one of its superior qualities. Five mil Mylar has seven times the cut-through strength of ten mil varnished cambric.

Young to Head Gair Engineering

JACK WARNER (left), veteran Chief Engineer for Robt. Gair Co., Inc., told his old friends at Engineering Conference recently of his plans for retirement as of Jan. 1. Mr. Warner was one of the founders of the Engineering Division of TAPPI and of the Engineering Conference, now ten years old.

CURT A. YOUNG (right), will succeed Mr. Warner as Chief Engineer of the expanding Robt. Gair Co. activities in North and South. Mr. Young has purchased a future home at Pelham, N.Y. He has been Chief Engineer for Riegel Paper Corp. for over 6 years and formerly was prominent in engineering activities of West Virginia Pulp and Paper Co. for 13 years.

Mylar has four times the tensile strength of varnished cambric. The dielectric strength of Mylar is 40% higher when new, and 100% higher after heat-aging for 500 hours at 150° C. than varnished cambric. Immersion of complete coils in salt water brought previous-design coils down to 1 megohm in 550 hours, while Mylar insulated coils after 1200 hours were still at several thousand megohms.

A solventless varnish, Permafil, which sets up in the absence of air has enabled lead entrances and taped end connections of coils to be immunized to the entrance of contaminants.

For d.c. motors, separate ventilation is best, as the forced air flow also permits low speed operation at full torque without overheating. Adjustable speed operation is the reason d.c. motors are applied. If the air brought to the motor through the ventilating ducts is contaminated, it is desirable to use a filter at the blower inlet. Even this may only slow down insulation deterioration.

A.C. motors below 200 hp can be supplied totally-enclosed fan-cooled for an average of maybe 40% over the price of a drip-proof motor. Above 200 hp this construction becomes expensive. In this higher range, the weather-protected motor has become popular. At a price perhaps 35% greater than a drip-proof motor, it prevents the intake of water droplets and solid particles to the insulation by means of baffling and air velocity changes. Both these designs can suffer, however, from moisture condensation, particularly during long shutdown periods. The totally-enclosed motor can breathe in vapor. Extra dips and bakes with insulating varnish merely prolong the time that it takes for the insulation to become saturated. If appreciable shutdown is anticipated, continuous heating of the insulation during these periods should be provided either in the form of space heaters, or for polyphase motors below 100 hp, by single-phase current passing through the windings.

Since rewinding a drip-proof motor costs 35% or more of its original price, merely stretching out the intervals between scheduled rewinds or failures can justify appreciable capital expenditure.

Peaks of voltage far above normal rating can exist and cause insulation breakdown. If the distribution system which feeds a motor is operated with the neutral ungrounded, an intermittent ground fault at any point can build the voltage from phase to ground up to five or six times normal. Simultaneous failure of several motors on such occasions has been known to occur. The cure is to ground the neutral of the generator or transformer supplying this portion of the system. Transient overvoltages can also be caused by the operation of a breaker opening a line to line fault, by switching to full voltage on an autotransformer motor starter, and by disconnecting from the line a synchronous motor which is out of step. Not much can be done about these, but the line to ground peaks seldom exceed three times normal. Insulation in good condition can easily handle them.

If the motor is stalled by a mechanical jam or a single-phased condition, dangerous temperatures are reached within 20 sec. or less, depending on the motor. Reliance is placed on a thermal overload relay to disconnect the motor from the line before damage. Cases have occurred, however, where an operator has kept on punching the start button as soon as the overload relay reset, instead of looking for the trouble.

The coil insulation of large high-speed squirrel-cage motors, such as are used on debarking pumps, takes unusual mechanical abuse during every start. 3600 rpm motors have inherently low reactance and consequently high percent starting currents.

New insulation materials which show promise include epoxy resins, irradiated polyethylene, silicone rubber and fibrous glass tape.

PART III—MOTOR CONTROL—by F. D. Snyder, Westinghouse Electric Corp., New York.

This paper covers more common types of electric motors used in this industry and discusses the problem of selection and maintenance of control. Three basic duties are starting the motor, operating the motor, and stopping the motor in a manner so it will not be endangered.

A.C. Motor Control Problems . . . The manual reduced voltage transformer type starter for a.c. motors is always of the open transition type. Some types do not provide overload protection during starting, thus it is comparatively easy for a motor to be damaged by too frequent starting, since the overload relay is not in the circuit until after the starting period.

When starting a slip ring motor it is important that there is sufficient resistance in the secondary circuit to limit the current drawn from the line to not over 250% of full load current at the starting instant and the resistance should be cut out at a rate so that at no time will the current exceed 250% of normal full load current. Malfunctioning of the control which will allow over 250% of full load current to flow will very frequently result in a damaged secondary or motor rotor winding. Starting slip ring motors with manually operated drum or face-plate type of controllers is always hazardous to the motor since the rate at which the secondary resistance is cut out is determined by the whim of the operator. Automatic controls with timing or current limit relays are preferable.

Synchronous motors start usually as

Interested in Machining at Century-Old Machinery Plant

(Left to right) CHARLES S. BARTON, President of Rice Barton Corp., showing visitors at Worcester, Mass., features of his company's well equipped works; GEORGE SPENCER, "Mr. Pulp and Paper" for Torrington Co., who now makes his home base at South Bend. Ind.; R. W. ALLEMAN, Olin Mathieson Chemical Corp., and H. B. "WHITEY" WILSON, Southern Territory Sales Engineer for Rice Barton, from Savannah, Ga. They were attending the Engineering Conference in Boston.

a squirrel-cage motor during the first part of the starting cycle. Here again the closed transition starter is to be preferred if reduced voltage starting is required. The field winding must be properly shorted, through the correct resistor, during the first part of the starting cycle. Before the field of a synchronous motor is energized it is essential that the motor has been allowed to come up to its maximum speed as an induction motor in order to have the least possible shock to the motor in the half cycle that it must pull into synchronous speed. The control must provide proper protection to disconnect the motor from the line in a very short time should it fail to pull into synchronism at the instant the field is applied.

Overload protection for a.c. motors is usually provided with all motor control. However, there are many motor burn-outs due to motor overheating where the overload relay and heaters are apparently correctly applied.

There is a question of two overload relays versus three overload relays for a three phase motor. An open phase fault in the primary of a power transformer where both the primary and the secondary are wye connected or where they are both delta connected will cause the current in two motor leads to be high and the third will have low current. In this case the two element relay is adequate. However, with the transformer connected wye-delta or delta-wye an open in the primary will cause the current to be low in two leads to the motor and high in the third. The latter may be 200% of normal value. Obviously a three-element overload relay will give better protection.

If there is any unbalance in the three phase voltages there may be a very bad unbalance in current. A 3% voltage unbalance can mean as much as 25% high current in one leg. Here again a three element overload will provide better protection. Unbalance of voltage can be for many reasons but one common reason is a single phase load.

Single phasing of the secondary or feeder circuit where a number of motors are on the same circuit can be a source of trouble. This is especially true where there are large and small motors involved. The large motors, running light, may continue to operate single phase without trouble, but one line of a small motor may have a very high current.

Motors of all kinds may be damaged, if improperly designed or adjusted control is used to provide decelerating torque. Squirrel-cage motors can usually be plugged at full or reduced voltage. The heating in the motor rotor is three times as great when plugging a load to a stop with a squirrel motor as when that same load is started from rest and brought up to full speed. A control cannot sense the rotor temperature and a safe plugging stop application must always be engineered and a predetermination made to be sure that the motor can handle the job.

D.C. Motors Control Problems . . . To avoid damage to direct current motors during the starting period the armature current must be held within safe limits during this period. When the motor is to be connected to a constant potential line the starting resistance must be such that the initial current flow is not over 200% of full load current and sufficient starting points must be provided so that the motor can be accelerated without exceeding this value.

Where d.c. motors are designed to have an adjustable speed by field control it is important that the motor fields be kept at maximum strength until after the armature is operating at full base speed. This will insure a maximum motor torque at a minimum of armature amperes. After the full armature voltage has been applied the rate at which the field current is reduced, to get the desired final motor speed, must be kept at a slow enough rate so that safe armature current will not be exceeded.

Hand operated field rheostats for d.c. motors must be operated slowly so as to avoid excessive armature currents, both motoring and regenerative. A field fluttering or similar relay should be provided for both accelerating and decelerating.

Direct current motors will provide braking torque either by dynamic or regenerative braking. In either case the control must limit the armature current and voltage to safe values during the entire stopping period.

The overload relay for d.c. motors should have inverse time characteristics for normal overloads and an instantaneous trip for current values over 200% of full load current. D.C. motors will flash their commutators when the current reaches a high value and it is therefore essential that an instantaneously acting relay be provided which will disconnect the motor before a dangerous current builds up.

On all d.c. motor applications adequate protection must be provided to disconnect the motor armature in the event of field failure. The field of a d.c. motor, designed for more than two to one speed control by field, should never be left connected at the full field value when the motor is not running. The lack of ventilation may cause damage to the field due to overheating.

PROGRESS REPORT ON NEW MACHINE to make newsprint at St. Croix Paper Co. is studied by JEFF FARMER (left), Plant Engineer, St. Croix, formerly Plant Engineer at Hollingsworth & Whitney Co., and DON SIMONDS (right), recently promoted to Vice President in Charge of Sales, Beloit Iron Works.

Simonds Promoted by Beloit To Vice President for Sales

Donald R. Simonds, who has been with Beloit Iron Works since 1950, has been promoted to vice president in charge of sales, announces Harry Moore, president of the Beloit, Wis., firm.

Mr. Simonds was born in Southbridge, Mass., and he graduated from Worcester (Mass.) Polytechnic Institute in 1930. He served as chief engineer of Gould Paper Co., Lyons Falls, N.Y., prior to joining Beloit.

WHEN MAINTENANCE DEPT. IS TO BLAME . . . C. F. Hedlund, Associated Factory Insurance Co., had some interesting comments on motor failures. The maintenance men came under the gun for their share of motor failures:

(1) Overcurrent relay heaters and fuses too large; overloaded motors.

(2) Overgreasing of motors.

(3) Clogged ventilating ducts on motors.

Harry Wright (of Allis-Chalmers Mfg. Co.) contributed some comments on control maintenance. Overcurrent relay contacts are usually damaged at the time of a contactor coil failure because the coil circuit is not fused and the overcurrent relays are in series with the coil.

This mill engineer commented that specific records of all motor failures were most valuable in determining the location and causes of failures. These records can be obtained from the repair shops if specifically requested on each purchase order. It is true that many times the evidence has been destroyed during the failure but many things can be determined such as:

(1) Roasted insulation indicating sustained overloads.

(2) Stator failure caused by bearing failure.

(3) Burned or broken rotor bars indicating extreme duty cycle.

(4) Phase group fault indicating insufficient coil insulation.

(5) Motor filled with grease, paper dust, water or other substances.

Mr. Grady of Oxford Paper Co. stated that he had been keeping such records for 30 years and finds them invaluable.

Regarding the difficult-to-remove carbon deposits behind risers in d.c. armatures, one mill engineer reported success using a good non-toxic solvent to flush out armatures every six months.

EXPERIENCES WITH TENSION MEASUREMENT AND CONTROL ON MACHINES . . . by M. J. Osborne, Electrical Supt., Bowaters Southern Paper Corp., and Walter Mikelson, Engineering Planning and Development, General Electric Co.

Paper tension has always been difficult for paper manufacturers to control. In most mills tension has been controlled indirectly by holding speed with line shaft drives or by automatic regulation of section motor speed or current on electric sectional drives.

With the installation of the paper tensiometer as an automatic control, tension of moving sheets is held constant regardless of changes in any of the variables affecting tension, such as freeness, consistency, dryer temperature, moisture content, calender stack loading or friction load variations. The tensiometer utilizes only one very short roll and therefore does not complicate the paper threading of the machine.

The paper tensiometer gives a continuous and accurate indication of tension variations without damage to the sheet. It is easily adjusted and simple to maintain. Its fast response time permits its use on high-speed paper machines, for automatic control. The fastest flat paper machines in the world, running at over 2000 fpm continuously, are equipped with drives which automatically correct for tension variations caused by varying stock and machine conditions.

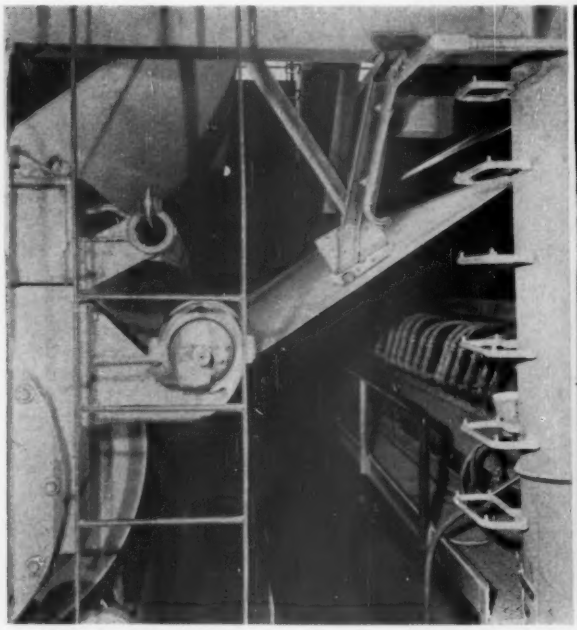
Description of the Equipment . . . The tension head consists of a small roller about 4 in. in length, mounted on ball bearings and attached to a short leaf spring. This roller rides on top of the moving sheet. The head is mounted so that the roller is one half of an inch below the normal pass line of the sheet and a slight "dimple" is depressed into the sheet. Changes in paper tension change the roller deflection a few thousandths of an inch. This changes the air gap of a magnetic structure which emits an electric signal proportional to the tension. Roller deflection for rated full scale tension is approximately 0.040 in.

The scale of the indicating instrument is marked in arbitrary units from zero to 100. The instrument can be calibrated by the user on his machine in absolute units of lb/in. if desired. The entire equipment is well protected and sturdily constructed to withstand high temperatures, humidity and corrosive atmospheres.

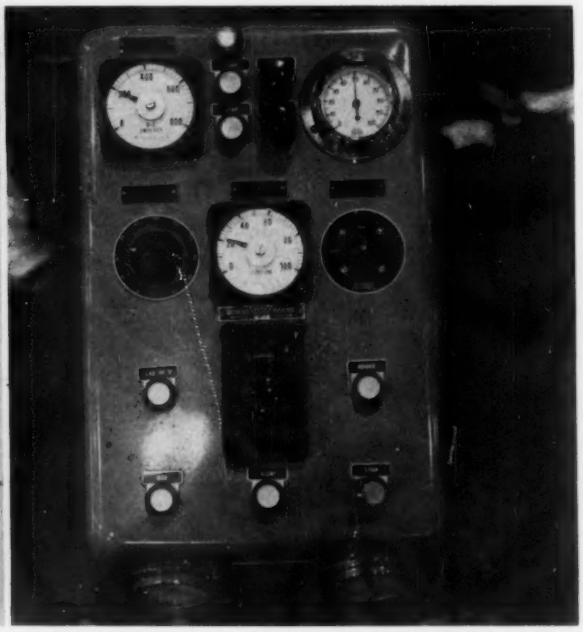
The tensiometer output can be applied and adjusted to actuate the draw adjustment on line shaft drives or to operate directly in standard electronic circuits of sectional drives but it is more directly applicable, and provides faster control action when used with speed regulated electronic drives. An operator's adjustment is available on the panel for adjusting tension. A switch permits switching the tension circuit in or out of the standard speed regulator. The operator has available at his discretion either speed control or tension control at the snap of a switch. Switching can be done with the sheet on the machine.

The equipment has been applied to lightweight paper as well as paperboard. A fixed adjustment permits setting the leaf spring stiffness in steps to provide five tension ranges from approximately 3 lb./in. full scale deflection to 16 lb./in. full scale deflection. In addition a range of paper tensions of 6 to 1 or more can be accommodated with any fixed spring setting, so once set on any given paper machine, the adjustment need not be changed.

Operation and Maintenance Experi-



A NEW DEVELOPMENT—THE PAPER TENSIOMETER . . . This installation at Bowaters Southern Paper Corp. is successfully operating on the world's fastest newsprint machines. The installation is between dryers and calender stack. Note the roll is not a spring roll.



CONTROL STATION FOR BOWATERS' TENSIOMETER . . . Top view of calender operator's control station showing tension indicator, adjusting rheostat and on-off control. On the front of this control panel can be seen the doctor loading devices.

ence at Bowaters . . . The tensiometers at Bowaters Tennessee Mills are with a few exceptions trouble-free.

For best results the tension heads should be mounted from structures not subject to severe vibration. Otherwise machine vibration can be accentuated by an insecure mounting and has been known to cause erratic operation.

The bearings located inside the tensiometer roller must be of the highest quality. At 2200 fpm, the roller rpm is over 7,000. Our rollers have been used nearly three years without a failure.

A source of trouble could be the tension roll. If the bearings in the roll are pre-loaded so that the roll turns at a slower speed than the sheet, or if the roll is out of alignment, the tensiometer has to be turned off until corrections are made.

Our papermakers voluntarily turned on the tensiometers between the dryers and the calender during start-up and insist that they are vital to operation.

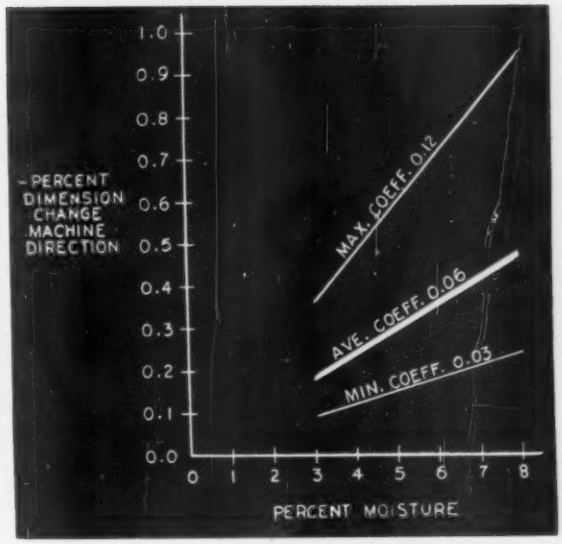
Of the various types of tensiometers which might be used, we believe the type we are using is the only practical type available for paper machine use. It is simple and trouble free. It is easy to install and maintain and does not clutter the machine.

A New Development for the Paper Industry . . . The tensiometer provides a much needed means of measuring and regulating true tension on a paper machine. It is an outstanding contribution to the art of operating and controlling machine drives. Continuous operating experience with standard production units on various machines ranging from board to tissue at speeds from 100 to over 2200 fpm driven either by line shaft or sectional drives testifies to the effectiveness and reliability of this new method of draw control.

A question was raised regarding operation of the tensiometer between the calender stack and dryers where a spring roll had been installed. It is recommended that the spring roll be removed or at least locked in position.

Mr. Mikelson was asked the maximum number of tensiometer units on one machine. To his knowledge the maximum per machine was four, but an engineer volunteered that he had 14 tensiometers of this type on an experimental paper machine.

Mr. Mikelson had worked with the Institute of Paper Chemistry and a large paper company to determine if possible how the moisture content of the sheet affected the machine direction dimensions of various sheets of paper. All papers studied were found to have coefficients of expansion between .03 and 0.12 (percent moisture vs. percent dimension change in machine direction). The papers included in the study were kraft, newsprint and glassine. Most papers have a coefficient of .06. The curve Mr. Mikelson plotted accompanies this article.



HOW MOISTURE CONTENT OF SHEET AFFECTED MACHINE DIRECTION DIMENSIONS. Papers studied included kraft, glassine and newsprint. Study was made in connection with the paper tensiometer by Co-Author Walter Mikelson. Test results from approximately 15 sheets are shown. The successful uses of tensiometer is reported in this article.

"FUNDAMENTAL APPROACH TO STEAM PLANT MODERNIZATION," by John R. Haug.

"Electrical interconnection with the local power company should always be considered whenever the opportunity for such a tie exists. It offers a number of advantages." This was one of several strong points made by Mr. Haug.

A mill can usually buy electric power cheaper than it can generate it with its own condensing turbines. Electric power companies, normally limited to 6% net return by regulatory commissions, can meet fixed charges on power facilities for an annual 12 to 15% of investment. Pulp and paper mills, on the other hand, look for a net return of at least 10% with total fixed charges running from 20 to 25% of investment.

Other points he made:

"Another increase in the amount of by-product power may be obtained by eliminating operation of small mechanical drive turbines on boiler plant auxiliaries. The same steam quantity passed through a main turbogenerator, otherwise not fully loaded, should furnish almost double the amounts of by-product power."

"A common criterion is the ability of a proposed plan to return in each year a certain gross amount often 20 to 25% of investment."

"ELECTROCHEMICAL CORROSION STUDIES ON CARBON STEEL IN ALKALINE PULPING LIQUORS"—by Dr. Walter A. Mueller, Pulp and Paper Research Institute of Canada.

This paper caused quite a stir and promoted corridor discussion among those of us who have been concerned with digester and other pulp mill corrosion. The work had been done with scientific thoroughness. Corrosion is broken into two types of reactions:

(1) The dissolution of the metal accompanied by the removal of positive ions from the metal.

(2) The depolarizing reactions which replace the positive charges.

Ten steel samples were immersed in alkaline pulping cooking liquors and ten different potentials were applied to the samples. The corrosion rates were measured and photographed. The outstanding thing about the photographic display was that corrosion could be seen acting on the samples. The sample which had —0.7 volts imposed upon it was not corroding whereas the samples above and below this potential were corroding practically before our eyes.

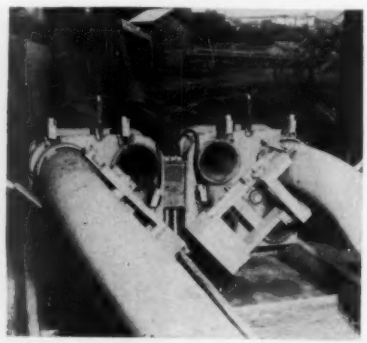
The potential-time curves showed that steel in these liquors assumed a state between active and passive. Small differences in pre-treatment may produce active (corrosion) or passive (protection) which may explain irreproducible corrosion rates.

Mr. Mueller's work bears out the electro-chemical nature of corrosion and points to the value of further cathodic protection work in pulp mills although the mechanics of this type of protection will not be simple.

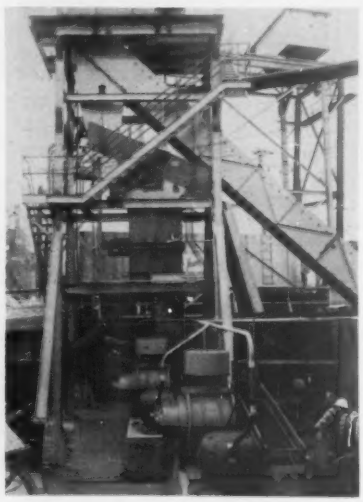
The Penobscot Chemical Fibre Co.'s experiments show the value and difficulty of cathodic protection in digesters (see pictures and report in PULP & PAPER, Nov. 1956, pp. 61-62).

NEW SYSTEM AT LONGVIEW FOR UNLOADING, CONVEYING AND STORING CHIPS.

Longview Fibre Co. increases pulp chip handling by adding 80 unit/hour chip unloading pit, its third for receiving chips via 710 rail cars.

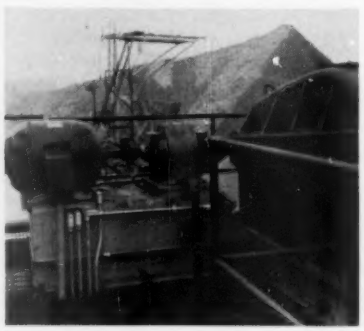


Manually set "air switch" in each Rader Pneumatics pressure transport system directs its chip flow to any of four delivery lines.

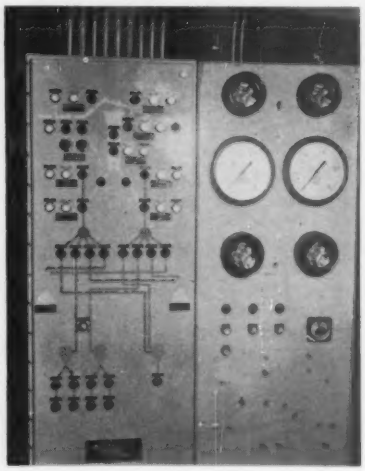


Variable-speed conveyor carries chips from No. 3 unloading pit up incline and discharges into hopper for gravity flow through Link-Belt scalping screen, over Magnetic Engineering magnetic pulley to either or both Rader Pneumatics high-pressure conveying systems (bottom foreground).

Electric driven vibrator, built in Longview Fibre shop, facilitates rapid discharge of chips from hopper bottom rail car.



Variable speed drive powering chain conveyor of No. 3 chip unloading pit consists of 50 hp General Electric motor, Eaton Dynamatic Div. Adjusto-Speed and Western Gear Works reduction gear.



Functions of Longfibre's No. 3 chip unloading pit and associated pneumatic transport system are centrally operated via graphic panel and associated control system developed and built by Industrial Components, Inc. of Portland, Ore.

Longfibre doubled chip storage capacity to 50,000 units. Rubber tired Dozermobile (Wagner Tractor Co.) recovers from stock piles when mill operates on stored chips.

A PULP & PAPER FIELD REPORT

Progress at Big

How Longview Fibre with many new inno

—Longview, Wash.

● Compared to activities going on at Longview Fibre Co. plant, action in a 5-ring circus might appear a little slow. Although the firm has five converting plants (four on the Pacific Coast and one on the East Coast), all of its pulp, paper and board manufacturing facilities are contained here in the headquarters plant which is currently expanding "into the 1,100-ton per day magnitude," as Vice Pres.-Res. Mgr. Robert S. Wertheimer expresses it.

How are things shaping up? Some phases are completed and already in production, others are to be completed by early in the year and the rest are expected to inaugurate production before the end of next fall.

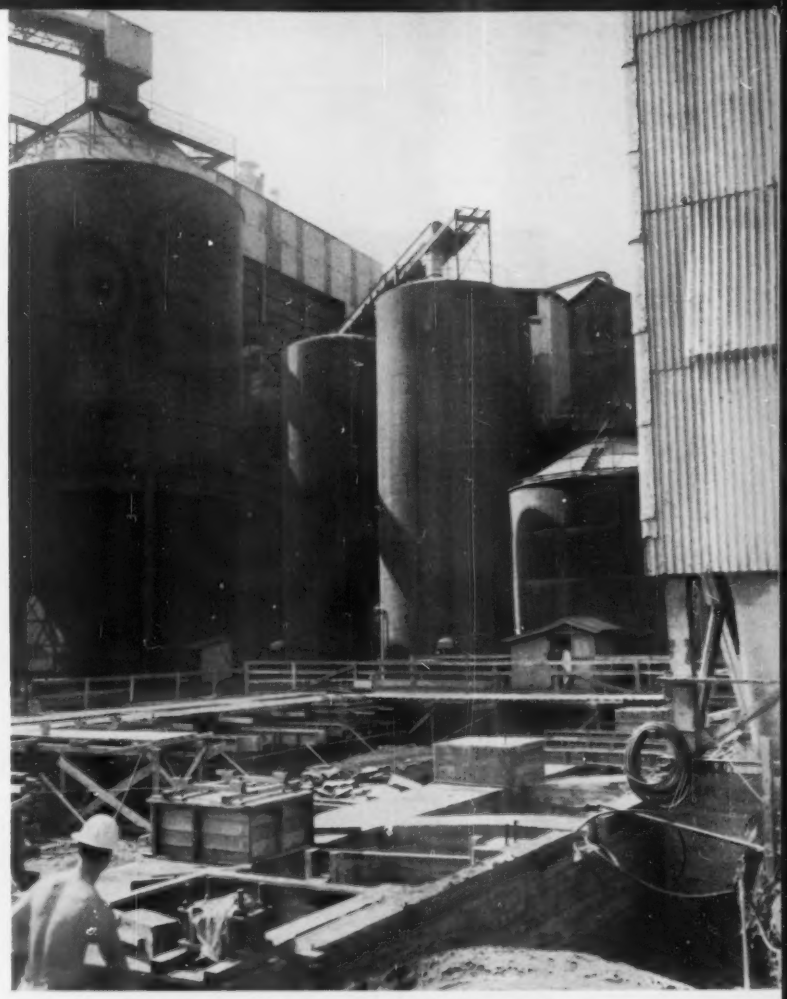
The overall expansion for increasing daily output of paper and board by 250 tons involves additional components ranging all the way from increased chip handling facilities to the new No. 7 machine.

Longfibre is an important factor in the West's kraft production and a pioneer in utilizing forest products industry residues in the Columbia River area. It coined the slogan "Chips Saved From Waste" emblazoned on each of the company's 22 semi-trailers bringing salvaged chips in from mills producing lumber, veneer and other wood products within a radius of some 200 miles. Besides, some firms deliver wood chips via their own truck-trailers and around 800 railcars are devoted to hauling chips to this Longview operation. According to Mr. Wertheimer, salvaged residues account for 92% of the plant's total wood requirements.

NEW HIGH CAPACITY CHIP UNLOADING PIT . . . One already-completed segment of the overall expansion is a third unloading pit, with associated handling and storage facilities, for rail-hauled chips. This No. 3 unit has capacity for receiving and delivering 80 units per hour. Of the three pits, No. 1 is for side-unloading cars only, No. 2 for both hopper-

Far West Kraft Mill

Co. grows to 1,100 tons-per-day operation vations and new types of machinery



NEW 260-TON KRAFT PULP MILL ADDITION, now in production at Longview Fibre Co., as viewed across foundation of huge Combustion Engineering recovery furnace going in beside No. 14 recovery unit (right foreground) built four years ago as industry's largest.

bottomed and side-unloading cars 40-ft. long, and No. 3 for hopper-bottom cars up to 55-ft. long.

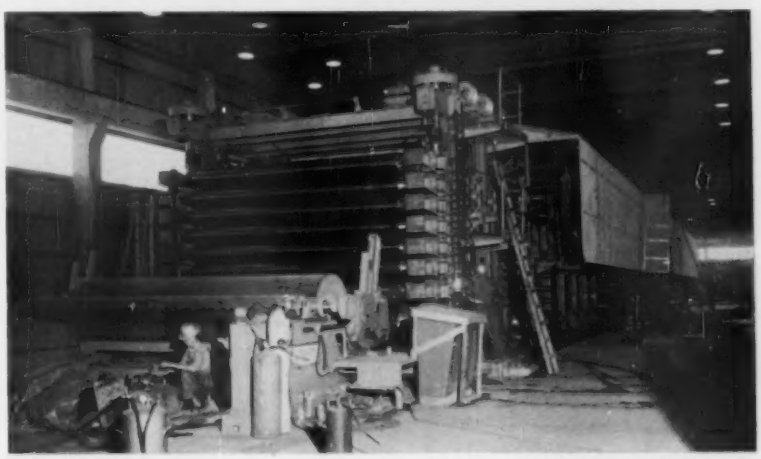
At the new addition, chips dump from the railcar into a receiving pit equipped with a variable speed conveyor with Link-Belt rivetless chain and steel flights driven by a 50 hp General Electric induction motor through a Western Gear reducer via an Eaton Adjusto-Speed coupling. This conveyor transports chips from the dump pit up a 42° incline to discharge into a hopper leading to a Link-Belt vibrating "scalping screen" where chips pass through a 3-in. mesh before passing over a Magnetic Engineering & Mfg. magnetic pulley, thus removing all large objects and tramp iron.

HOW CHIPS ARE CONVEYED . . . The chips are then taken over by a comprehensive transport consisting of two duplicate Rader Pneumatics high-pressure systems, each delivering to any of four destinations—No. 1 screen room, digester bin, or either of two storage piles. The delivery is through 10¾-in. OD pipe and transport distances range from 330 to 700 ft.

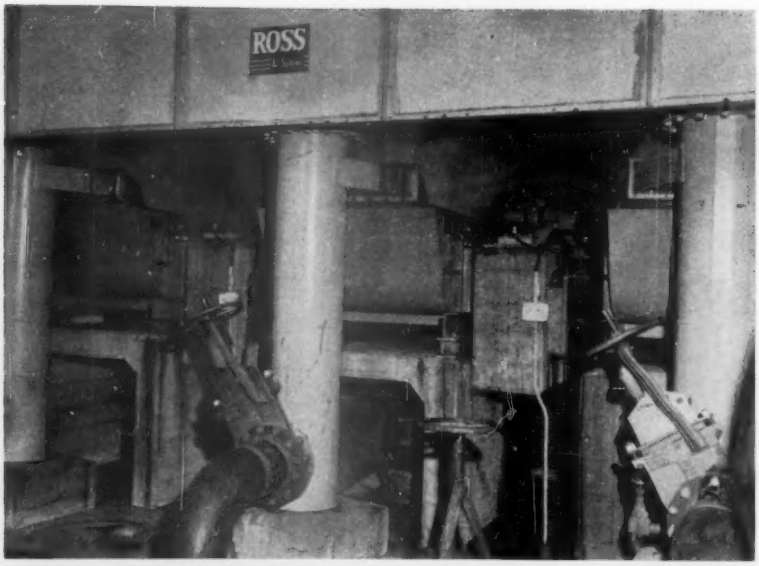
Each Rader Pneumatics system includes an RP star feeder, powered by a 10 hp General Electric-Pacific Gear gearhead motor, and Sutorbilt air pump V-belt driven by a 150 hp G.E. motor. The two systems, although entirely independent of each other, are both controlled via an Industrial Components Inc. control system panel located in No. 3 pit building. An operator, by means of this graphic panel and the associated interlocked control system, carries out all but one of the car-to-delivery-point functions. This singular exception involves changing either or both of the two RP 4-way "air switches"; manually set units directing the flow of chips to either of four delivery pipes in each system.

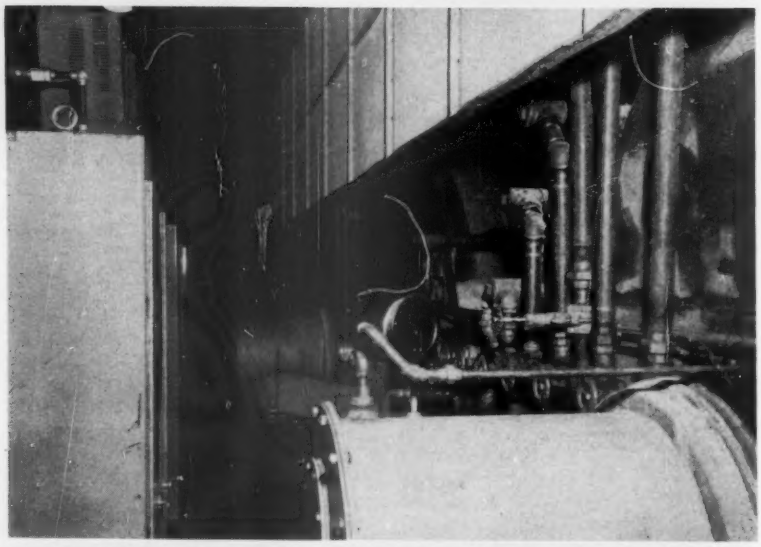
HOW CHIPS ARE STORED AND RECLAIMED . . . In conjunction with enlarging the chip facilities, the company more than doubled its chip storage by clearing and black-top hard surfacing a 4½-acre area to be used for No. 2 storage pile. According to Asst. Pulp Mill Supt. R. E. Strommer, this increases the chip storage capacity from the previous 25,000 to more than 50,000 units.

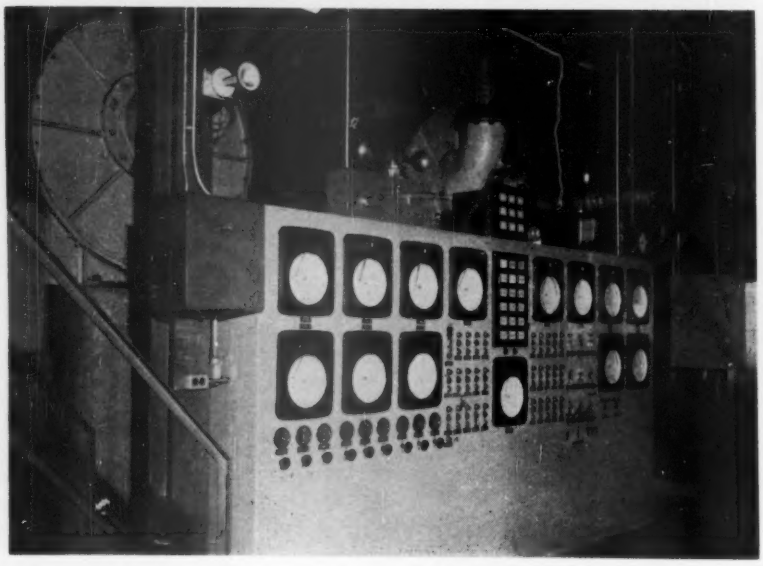
Storage chips are delivered to the piles by either or both of the pressure transport systems of the No. 3 chip pit. A D6 Caterpillar crawler tractor, equipped with bulldozer, works on the piles keeping the chips spread out and packed during build-up periods. When taking chips from storage, a rubber-



A UNIQUE MACHINE "OF MANY PARTS" . . . Dry end of Longfibre's No. 7 combination paper and board machine nears completion. See story for description.







tired Dozermobile tractor with two-unit scoop recovers chips from the pile for mill use.

NEW DIGESTERS . . . The pulp mill's 260-ton per day capacity (dry pulp basis) addition was completed and put into production late this summer. Although fully integrated with the rest of the plant, the pulping addition occupies its own building, containing complete pulp processing facilities, and carries on its operations rather independently. The unit has three 4400 cu. ft. mild steel digesters built by American Pipe & Construction Co. and lined by Stebbins Engineering with 5½-in. thick carbon brick —Longfibre's first brick-lined digesters. These and the associated No. 2 blow tank, also built by American Pipe, each have 60-ton pulp capacity.

NEW WASHING UNITS . . . Pulp washing facilities in the addition have 400-ton per day capacity. The equipment includes four Bird deknotters, a Dorr-Oliver 3-drum barometric-leg vacuum washer, two Cowan Mark IV (Appleton Machine) screens and a Dorr-Oliver barometric-leg vacuum decker from which the stock is delivered to high-density storage by J. D. Christian-Engineers screw conveyors.

This washing system not only processes all pulp from the section's three digesters, but also the pulp output of No. 11 digester—the most recent to be installed prior to the latest three which are designated Nos. 12, 13, 14.

The unit's pulp storage consists of three American Pipe steel tanks, each of 75-ton (dry basis pulp) capacity at 15% consistency. Flow from these Impco-agitated tanks is through De-Zurik stock regulators to any of the machines via intermediate tanks. A single control panel, using Foxboro instruments, controls stock from the time it leaves the digesters until it reaches the machines.

The new pulping section has an

TOP VIEW—FIRST PROCESSING IN NEW SYSTEM . . . Battery of four Bird deknotters give first processing to stock going through 400-ton washing system of Longview Fibre's pulp mill addition. They have Kelton stainless valves and a Ross hood.

MIDDLE VIEW—WHERE STOCK IS WASHED . . . Three-drum Dorr-Oliver brown stock washer with Ross hood. Drive of No. 3 drum is shown in foreground.

LOWER VIEW—CONTROLS FOR SYSTEM . . . Washing-distribution panel of pulp addition at Longfibre controls stock throughout operations from digester to intermediate tanks ahead of machines. Two Mark IV Cowan screens are behind Foxboro-equipped panel.

American Pipe blow-heat recovery tank, equipped with American Heat Reclaiming Corp. spiral heat exchangers, which utilizes waste heat from the blows to heat processing water.

To facilitate reaching the 1,100-ton capacity the plant's two oldest digesters are now being replaced with larger, modern-design stainless-clad units. The two—one built by Chicago Bridge and the other by Graver Tank—are to be completed early next year and will increase production around 50 tons per day.

A GIANT RECOVERY UNIT . . . Longfibre's No. 15 recovery furnace—recognized as the world's largest when the order was placed—is now going in alongside No. 14, which had distinction as the industry's largest when built four years ago. Foundation pouring for No. 15, a Combustion Engineering unit with design capacity of 2 million lbs. of solids per day (equivalent to 570 tons of pulp), was completed in September as part of a schedule calling for production start-up about a year later.

This furnace is designed for generating 320,000 lbs. of steam per hour at 825 psi; will have tangential secondary air, 12 liquor sprays, two smelt dissolving tanks, two cascade evaporators operating in series on liquor and in parallel on gas to deliver liquor to the combustion chamber at around 68% solids; will have platen type superheaters, steam soot-blowing equipment, automatic air-to-fuel ratio control and is to be equipped with a Research Corp. 3-unit precipitator.

HIGH CAPACITY EVAPORATION . . . Erection of a Blaw-Knox Buffalo Vac 7-effect evaporator (No. 7 at the Longview plant) started in late summer on a schedule calling for production start-up by winter or late fall. Of 400 pulp tons per day capacity, this evaporator will operate on feed liquor containing 15% solids. It is designed for 60 lb. steam, has typical B-K arrangement with vapor chambers and liquor separators mounted separate from the heaters. Liquor makes three passes in the last two effects. According to Asst. Pulp Mill Supt. G. L. Hollimon, 1 lb. of steam will evaporate in excess of 6 lbs. of water.

400 PULP TONS CAPACITY EVAPORATOR . . . Blaw Knox 7-effect Buffalo Vac evaporator, No. 6 at Longview Fibre, scheduled for production start-up late this year. Discharge end of No. 5 evaporator in left foreground.

POWER PLANT ADDITIONS . . . Erection of No. 16 power boiler, a 350,000 pph Combustion Engineering job for burning high viscosity fuel oil (1500 SSF), started in October and is to be in production early next year. Designed for 925 psi steam pressure, it will have completely sealed, pressurized firing—using a forced draft fan and no exhaust fan—and equipped with a Ljungstrom air heater.

Also in the power supply end, a 25,600 kva (20,000 kw) General Electric turbogenerator is to be delivered about the first of the year for produc-

CHIPS FROM SAWMILL RESIDUALS CONTINUOUSLY ARRIVE at Longview Fibre Co. by truck-trailer. Besides the company's fleet of 22 trailers, several suppliers deliver chips in their own or leased transports such as this 13½-unit Utility semi-trailer (right view), pulled by Peterbilt Cummins-powered tractor, hauling 85 miles from LHL Lumber Corp. At left, unloading chips from 13½-unit Utility semi-trailer—probably the largest capacity legally operating on public highways.

tion start-up next summer. This hydrogen-cooled generator with back-pressure turbine will operate on 800 psi steam, the exhaust of which is to be utilized as mill process steam. The turbogenerator, in effect, functions as a combined electric power generating unit and steam reducer bringing the pressure down to 175 psi and 60 psi at the extraction and exhaust connections, John Schuh, assistant chief engineer, points out.

NO. 7 MACHINE IS UNIQUE . . . All of these prime component additions share in the general plant expansion to provide the additional stock for the new No. 7 machine. The latter, a combination containing "about everything in the book," as Gen. Supt. W. W. Clarke says, is well along installationwise, although some delivery delay has been experienced as result of the steel strike and the industry's current high demand.

Main components of this unique 180-in. machine include a Rice-Barton removable Fourdrinier in conjunction with two Valley Iron Works headboxes, two W. P. Evans Rotabelts, two Rice Barton suction presses, smoothing press, creping press and size press; and 160 lb. (Black-Clawson) Bagley & Sewall dryers, arranged in three sections. There are two (Black-Clawson) Bagley & Sewall open-sided calender stacks, a Black-Clawson reel and a Beloit winder.

The machine's stock preparation system is already installed and awaits completion of No. 7 machine. Among the stock processing components are two 440 series Bauer pump-through refiners, a No. 5 Miami jordan, No. 3 Claflin refiner and Shartle Hydrapulper.

No. 7 machine has rated capacity of 250 tons per day on board or 150 tons on paper and is designed "to be equally good on either."

(For additional detail specifications on this machine see original announcement in PULP & PAPER, p. 144-146 May '56.)

Ed Helm is Elected Reliance President

Edward E. Helm has been elected president of Reliance Electric & Engineering Co. Resigning as former President James W. Corey is new chairman of the board.

Mr. Helm, who has served as vice president and general manager since Jan. 1956, joined Reliance in 1924. Filling successively both district and home sales engineering and managerial assignments, he was sales vice president from 1946 to 1956. He was elected a director in 1947.

New Research Laboratory Opens at Covington, Va.

A new technological research and development laboratory at Covington, Va., was recently opened by West Virginia Pulp and Paper Co.

Considered to be among the most modern in the industry, the new laboratory gives the company a research network of eight installations geared to pulp and papermaking research as well as product development and improvement.

Features: Two-story brick structure with 11,000-ft. of floor space; completely air-conditioned with fully-equipped laboratories for pulping, bleaching and papermaking studies; constant-humidity room where delicate instruments evaluate experimental papers for various strength and other properties.

The lab also offers all facilities of a pulp mill in miniature including 5-gal. capacity digesters for cooking wood chips (a regular operating digester would be approximately 6,000 times as large). There is also complete installation of laboratory-scale bleaching equipment.

The new facilities are adjacent to the company's experimental pulp mill, which operates around the clock, five days a week, and according to the company, is the only installation of its kind.

Some 60 researchers and technicians are employed at the new center. Future plans call for doubling operations with expected requirements of a staff of 100.

Supts. at Chillicothe

On Oct. 4 over 200 papermakers toured the Chillicothe, O., Division of The Mead Corp., as part of a Miami Valley Supts. Division Meeting. That evening Patton Manufacturing Co., Inc., Springfield, O., sponsored a dinner at the Chillicothe Elk's Club. Mason Hinkle, general chairman and O. B. Mason, Mead's division manager, were speakers.

FKI Holds Meeting At Institute in Appleton

The Fourdrinier Kraft Institute recently held one of its periodic meetings at the Institute of Paper Chemistry, Appleton, Wis. Pictures show the delegates arriving and being greeted at the IPC, where its reports on research were made in closed meetings.

The delegates from 20 companies, represent 95% of all kraft board produced in the U.S.A. The FKI was organized in 1944 to study problems and promote uses of kraft board made on Fourdrinier machines.

FOURSOME DISCUSSING CONTAINER PROBLEMS. Left to right: JOHN STRANGE, President of Institute of Paper Chemistry, scene of Fourdrinier Kraft Board Institute meeting; WILEY L. JENNINGS, Vice President, West Virginia Pulp and Paper Co., New York; ROBERT McKEE, Director of the IPC's Container Research, and T. R. (TEDDY) MOORE, Vice Pres. and Gen. Mgr. of all Manufacturing Operations excluding Lumber (paper and paper converting) of Forest Products Division, Olin Mathieson Chemical Corp. Mr. Moore is based at the Olin Mathieson West Monroe, La., Works (former Brown Paper Mills). He had been Gen. Mgr. for Brown Paper Mill Co. for many years. At right, **ARRIVAL IN APPLETON, WIS., ABOARD A 7-CAR SPECIAL TRAIN.** This picture shows some of 50 members of Fourdrinier Kraft Institute—from 20 companies—arriving for conference, and being greeted by officials of Institute of Paper Chemistry.

NEW JOINT CHAIRMEN raise hands in cooperative gesture. M. J. (LEBBY) BOINEST, left, heads up Southeastern group, W. C. (JAKE) HAYES, right, is Southern chairman.

LOOKING OVER THEIR TROPHIES, retiring chairmen JIM HAIR, left, and BOB WHITE compare plaques presented them. They also got inscribed watches. Classmates from Clemson, both are Managers of large Southern mills.

ON-THE-SPOT COVERAGE

Dixie Meeting "Biggest, Best" Yet

British visitor describes use of synthetics and asbestos in felts; progress in quieting machine rooms; data on dry kilns

● The Joint Division of the Southern and Southeastern Superintendents seems to get stronger each year—proof showed in this year's gathering at the Francis Marion Hotel in Charleston, S.C., which attracted one of its greatest crowds to date: 385 persons, almost 100 more than last year.

Good humor prevailed. It was as though everyone were endorsing a theme that "things are good and look even better for next year."

M. J. Auchter, president of the national association, injected humor into a speech suggesting that several states in the South could use members from more big mills. He then commented that Wisconsin could use the same. Wisconsin is Mr. Auchter's home state where he is manufacturing v.p. of Charmin Paper Mills.

Good humor prevailed, too, when retiring Southeastern Div. chairman Bob White, prod. mgr. of Sonoco Products Co., stood up a moment after his compatriot, Jim Hair, mgr. of Crossett Paper Co. and Southern Div. retiring chairman, received a watch for "services rendered." Said Mr. White: "I can't let Jim get ahead of me. I'll now introduce the man who's going to give me my watch." The two Clemson classmates have followed almost parallel careers since they graduated together.

New chairmen of the Joint Divisions were installed at the final meeting. M. L. (Lebby) Boinest, paper mill supt. of the Halifax Paper Co., became chairman of the Southeastern Div., and W. C. (Jake) Hayes, mgr. of Owens Illinois-National Container's Valdosta, Ga., mill, became chairman of the Southern group. Next year's meeting is tentatively scheduled for Jacksonville, Fla., 85 miles from Mr. Hayes' home base. J. D. Dailey, mgr. of Riegel Carolina at Acme, N.C., became first vice chairman of the Southeastern Div., and Franklin Jones, pulp mill supt. of the Container Corp. of America mill at Fernandina, Fla., was named first vice chairman of the Southern Div.

SYNTHETICS MEAN LONGER DRYER FELT LIFE. . . . Dr. Edward Race, Scapa Dryers, Ltd., Lancashire, England, who journeyed 3,000 miles to deliver a report on latest trends in dryer felts (actually for the second time—the first: Lake Placid), called the all-cotton felt "obsolete." He described the properties of synthetics.

Small percentages of synthetics can be used to reinforce cotton; or, nylon and dacron can be used in larger quantities in place of cotton; or, the felt can be made wholly of synthetics. The latter choice was dispelled as too costly in the event an all-synthetic felt should be ruined by accident early in its life. The use of synthetics with cotton, however, was favored by Dr. Race.

Cotton's desirable properties were listed as cheapness, good strength, reasonable resistance to abrasion and good dimensional stability. But, said Dr. Race, it is highly susceptible to damage at low pH value (especially at high temperatures), has poor flexural endurance and slight traces of iron can greatly reduce its life. (Dr. Race described a case in which an all-cotton felt with a normal life of 90 days wore through in six days. Examination showed the imprint of a boot on the felt. The break was caused by trace

amounts of iron in the sole of the shoe.)

In comparison, both nylon and dacron have attractive properties: they are superior to cotton in strength, abrasion resistance, flexural endurance and resistance to heat, he said. Dacron is outstanding in its superiority to resist heat damage and attack by acid at high temperatures; nylon has the greatest resistance to abrasion and the best flexural endurance.

Tests also show, according to Dr. Race, that asbestos, originally incorporated in cotton felts to provide resistance to degradation by heat, has previously unsuspected disadvantages. For one thing, asbestos fibers are so weak that a cotton-asbestos felt must rely on the cotton for its strength. Also, oddly enough, asbestos is a poor insulation against heat. Consequently, said Dr. Race, an asbestos-faced felt offers too little protection to a cotton back. The big advantage with asbestos: it absorbs virtually all of the acids and much of the iron, which is significant since cotton degradation increases rapidly with a decrease in pH.

REDUCING THE MACHINE ROOM "SCREAM." . . . At last year's Superintendents meeting, Beloit's Joe Burns, of Atlanta, predicted that eventually all machine room noise would be lowered to acceptable ranges. This year, C. B. Dahl, of Beloit Iron Works, described results by which, he said, "any machine can be effectively silenced." In addition, he announced methods by which dry end noise on most machines can be reduced by modifications in winders.

Work on machine silencing began at Beloit in the 1930's. Dr. E. J. Abbott of Physicists Research, Ann Arbor, Mich., was engaged to work on the problem and, with J. D. Kraus, of Kimberly-Clark Corp., developed the well-known Abbott and Kraus "gap silencer." Later tests convinced researchers that the "gap silencer" was most effective in reducing suction roll whine. By 1950, when machine speeds began to substantially increase, new tests were initiated. The "gap silencer" worked well in some cases but results could never be anticipated. A new program was initiated to reduce suction roll noise to 90 decibels, and, later, to 85 db.

Physical properties of the noise were studied as well as actual experiments with drilling patterns and silencers under mill conditions. The findings of this program have been incorporated into a production program which, Mr. Dahl claims, "should virtually eliminate suction roll noise from even the highest speed machines being designed."

Analysis of the winder noise showed that by making a winder without the back drum chevrons and by altering the front drum chevrons, noise can be reduced to 100-101 db only 3 ft. from the angle end of the front drum. Since front drum chevrons begin whining at about 3,000 fpm the angle of the front drum chevron has been increased from its present 6° to about 20°. The whine does not commence now until well over the 6,000 fpm speed.

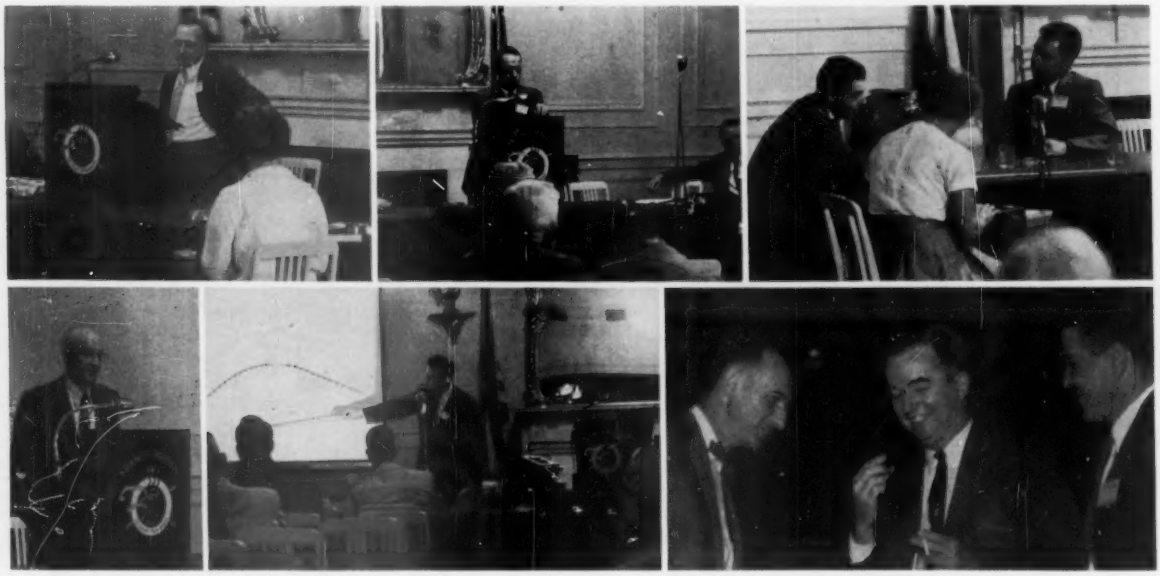
Mr. Dahl, assisted by John (Sandy) Hoover, Jr., produced tape recordings made in actual mills comparing the noise before and after silencing.

HOW UNION BAG CURED SOME LIME KILN HEADACHES. . . . Jim Piette, of Union Bag-Camp, described some problems experienced by Union Bag commencing in 1951, when they went from a small lime kiln operation (9 x 125 ft.) to a large kiln (10½ x 265 ft.). Perhaps his most significant observation was this:

"It cannot be stressed too strongly that one of the errors that we made was to treat the new kiln as an overgrown small kiln. You must convince your kiln operators that they must learn all over again to burn lime in the larger kilns."

Union Bag-Camp now has two kilns of the large size operating at its Savannah mill. Mr. Piette pointed to a period of 102 days when daily product of one of the kilns was 205 tons a day at a fuel economy figure of 8.68 mm btu's. It was designed to produce 175 tons at 9 mm btu's per ton.

One of the first problems encountered in the switch was the development of cold end rings in the big kiln, about 10 ft. down the chain section.



THE SPEAKERS. Top row, from left: DR. EDWARD RACE, who journeyed from England to discuss latest trends in dryer felts; JIM PIETTE, of Union Bag-Camp, who described the cure for some lime kiln headaches; RAY McCORMICK and SAM EVANS, who played roles of supervisor and superintendent in short play on misunderstanding in mill, illustrating FRED SHELLHORN's talk on human relations. Bottom row, from left: R. W. GRAY, of Union Bag-Camp, tells meeting about use of pictures as safety measure; C. D. DAHL, assisted by JOHN (SANDY) HOOVER, JR., at projector, shows how Beloit cuts machine room noise; R. G. MILLER, St. Regis, discusses further aspects of hardwood pulping with PETE MILLER (left) and H. C. SCHATZ, both of Combustion Engineering.

Cause was traced back to a suggestion that feed end temperature need be no higher than 300 to 350°. In order to eliminate the rings, back end temperature was allowed to rise to about 420° and the chain ring problem diminished.

Mr. Piette also suggested that operators can maintain uniform solids to the feeder and maintain a uniform feed to the kiln by making a hydrometer test, i.e., take a sample of mud as fed to the slurry feeder in a Baume cup and also take a hydrometer reading. They can thus control the concentration of solids to the volumetric feeder. To prevent poor combustion in the burning zone and prevent flame impingement on the kiln walls, fuel oil temperature was maintained at about 250° F., about 30° higher than recommended, resulting in no serious plugging of the oil gun nozzle and good atomizing of the flame.

Mr. Piette suggested that a long flame should be developed in the kiln and that this flame should be laid on the lime bed and not on the refractory in any way. By operating thus, Union Bag's Savannah mill has operated for over four years and only replaced 40 ft. of hot end lining. Thus far it has been unnecessary to replace any of the chain section. The gas temperature entering the chain is maintained slightly under 800° F.

SUPERVISORS INSTEAD OF "SUPERWORKERS." . . . Fred B. Shellhorn, vice pres. and mill coordinator of Owens Illinois-National Container Corp., placed the accent on "delegation of authority" and "ability to take good ideas and put them to work" in a discussion of human relations.

"There are two types of supervisors," said Mr. Shellhorn, "the one who can't stand to pass an instrument without making some change . . . the man who wants to do everything. He's a 'superworker' not a supervisor. And the man who knows how to delegate authority, who can pick the right man and leave him alone to do a job right."

Mr. Shellhorn called for three things in the top supervisor: a sense of fair play, an understanding of communication between individuals, and a man who knows what he wants. The worst thing a leader can do, said Mr. Shellhorn, is to accept an idea and then fail to put it to use.

SAVANNAH MILL USES PICTURES TO PREVENT ACCIDENTS. . . . R. W. (Bob) Gray, of Union Bag-Camp at Savannah, told how photographs are used to illustrate how an accident occurred and how it can be prevented in the future.

FLASHES AT CHARLESTON. At top, Beloit's JOE BURNS (left) of Atlanta, and C. P. SPALDING, of Beloit, Wis., captured by PULP & PAPER's camera in the elevator, dinner bound. Below, new Southern Chairman JAKE HAYES (left) flashes trick tie at BOB MILLER, Bird Machinery Co., in one of convention's less-serious moments.

At Union Bag, all accidents are thoroughly investigated, then, when the cause is determined, a company photographer takes photographs illustrating where and how the accident occurred and what caused it. These photos, mounted on slides, are shown once a week at a meeting of all department heads.

THE HOT PRESS IN ACTION. . . . Operation of the hot press was described by a three-man panel: W. C. Thompson, West Virginia Pulp and Paper Co., Covington, Va.; O. M. Rodgers, North Carolina Pulp & Paper Co.; and M. A. (Red) Higdon, Southern Paperboard Corp.

Mr. Rodgers described a particular problem encountered with North Carolina Pulp & Paper's hot press; e.g., the sheet getting too hot in the press and exploding. He said the problem was solved by using a suction roll with smaller holes (⅝ in.). He said advantages of the hot press were longer wet felt life and 2½% to 3% increase in water removal.

Mack (Red) Higdon, of Southern Paperboard, praised the suction hot press highly. He said in addition to better water removal, the sheet has better finish and printability, improved density and the tear is about the same. Mr. Thompson said at West Virginia they are impressed with the operation of the hot press. He said that future machines would probably be equipped with hot presses although they feel the cost of installing the press on operating machines is high at present.

NEED FOR FOREST MANAGEMENT. . . . In 1952, growth of Southern pine exceeded drain by about 19%, but at present it is doubtful that this healthy growth-drain relationship still exists.

With this observation, E. D. Martin, of Gair Woodlands Corp., called for intensified forest management aimed at keeping growth and drain in favorable balance. Using figures from the 1952 Timber Resource Review, Mr. Martin pointed out that pulpwood use has sharply increased since 1952 (up 25%) and predicted a probable use of 24 to 25 million cords by late 1958, an increase of 14% over 1955.

The industry, he said, controls 14 million acres of timber in the South—only 7%. Less than 20% of mill requirements are coming from company-controlled land. The small landowner owns about 65% of timber, furnishing 70% of the pulpwood requirements.

"Over 60% of his cutting practices are poor," Mr. Martin said.

Other facts: 25% of timberland is poorly stocked; 20 million acres need planting; one cu. ft. of every four cut in 1952 was wasted—or some 25% of timber resources taken off the stump. His estimate was that there are five million cords of pine available in chip form from slabs and edgings if the market is developed. In 1954, only 80,000 cords of chips came from this source.

WHICH HARDWOODS PULP BEST? . . . The results of inclusive tests on nine different species of hardwoods were announced by R. L. Miller, of St. Regis. After first discussing the way in which tests were carried out, Mr. Miller compared results as far as bleachability, strength and yield of the different woods. In bleaching, white oak and hickory were rated superior. Hickory has excellent strength properties and its yield was the highest of the nine species. White oak, while poor in strength, gave good yield. Red oak also rated good in bleachability and high in yield, although its strength, too, was poor.

The following table shows how they rate—1 (best) to 9 (poorest):

Species	Ease of Bleaching	Strength	Yield
White Oak	1	9	3
Hickory	2	2	1
Red Oak	3	7	4
Gum	4	1	5
Sap Gum	5	5	6
Ash	6	6	7
Yellow Poplar	7	3	9
Beech	8	8	2
Magnolia	9	4	8

PICTURES OF PEOPLE IN THE NEWS

West Coast Appointments

DR. ROLLAND F. SULTZE (left), has joined the Technical Staff at Simpson Paper Co., Everett, Wash. He recently obtained his doctorate from the Institute of Paper Chemistry, where he also obtained a master's. As a Yale ('51) undergrad he competed on the Yale-Harvard international track team.

E. PAUL DUNCAN (right), has been appointed Supervisor, Technical Service, Hooker Electrochemical Co., Tacoma, Wash., announces Horace W. Hooker, Western Sales Manager. A native of Tacoma, Mr. Duncan attended Pomona College before serving in the medical corps in Europe, and graduated from College of Puget Sound in 1950 in science. In 1953 he received a chem. eng. degree from U. of Washington.

In the News of Industry

Left to Right: RAYMOND F. BENNETT, former Mgr., Ecusta Paper Corp., cellophane plant, has been appointed Production Manager of Olin Mathieson Chemical Corp.'s entire Film Division. Mr. Bennett will be in charge of production at both Pisgah Forest, N.C., and Olin, Ind., plants. He was former Supt. of the Paper Mill at Pisgah Forest and is a Past National Pres. of Supts. Assn.

JAMES MACCRACKEN ADAIR, is new Sales Manager of Dynamatic Div., Eaton Mfg. Co., Kenosha, Wis. He formerly was sales manager of Electric Motor Div. of Hoover Co. Born in Ireland, he came to America in 1921, graduated from Rochester Institute of Technology in 1928 and immediately joined Westinghouse Electric Corp. Mr. Adair is married and resides with his wife and two daughters in Short Hills, N.J. He plans to move his family to Kenosha, Wisconsin, headquarters of the Dynamatic Division.

G. R. "BOB" SPELLMAN is now Sales Engineer for Albany Felt Co. in Midwest (Minnesota, Western Wisconsin, Iowa and Illinois). He replaces MARCUS T. REYNOLDS, recently named Asst. Sales Mgr., and now headquartered at Albany.

Elected by College Advisors

WILLIAM A. KIRKPATRICK (left), Vice Pres. and Technical Director, Allied Paper Mills, Kalamazoo, has been elected to the Advisory Committee for the Paper Technology Dept., Western Michigan College, Kalamazoo. He fills a vacancy caused by the death of CLARE M. SISSON, MacSimBar Paper Co., Otsego. DWIGHT L. STOCKER (right), President, KVP Co., takes Mr. Sisson's post as Vice Chairman of the committee for the year.

Regional Men—South and North

DAN FESSIA (left), Notre Dame graduate, will now cover the Southeast pulp and paper mills as Tech Sales Rep for Geigy Chemical Corp.

JEROME S. GLEASON (right), Buffalo, N.Y., has been appointed Western New York State Sales Manager by Alloy Tube Division, Carpenter Steel Co., Union, N.J.

In Industry Sales Posts

JOHN W. NATWICK (left), has been promoted to Manager of Pulp and Machinery Div., Jackson & Church Co. He will head their expanding activities in chemical pulp washing, high density bleaching and transportation and storage of nodule pulps.

R. C. WEAVER (right), joined the San Francisco office of Raybestos-Manhattan, Inc., to promote sales in forest industries of Poly-V Drives, Condor and Whipcord belting, industrial hose, and related products. Mr. Weaver has had 19 years of experience in industrial rubber goods.

Coating Specialists in New Posts

HARRIS O. WARE (left), formerly of Hercules Powder Co., is now Director of Research for Beveridge Paper Co., Indianapolis, Ind. He has served as chairman of the Coating Committee Council of TAPPI and has been active in coating conferences.

ALFRED D. BONANNO (right), is new Manager of the Kelco Co. Paper Division. Mr. Bonanno, with Kelco's Technical Sales Staff since 1953, will now direct and supervise Kelco sales and technical service to the paper industry throughout the U.S. and Canada. He is a graduate chemical engineer of Northeastern University, Boston, Mass., and Secretary of TAPPI Coating Committee.

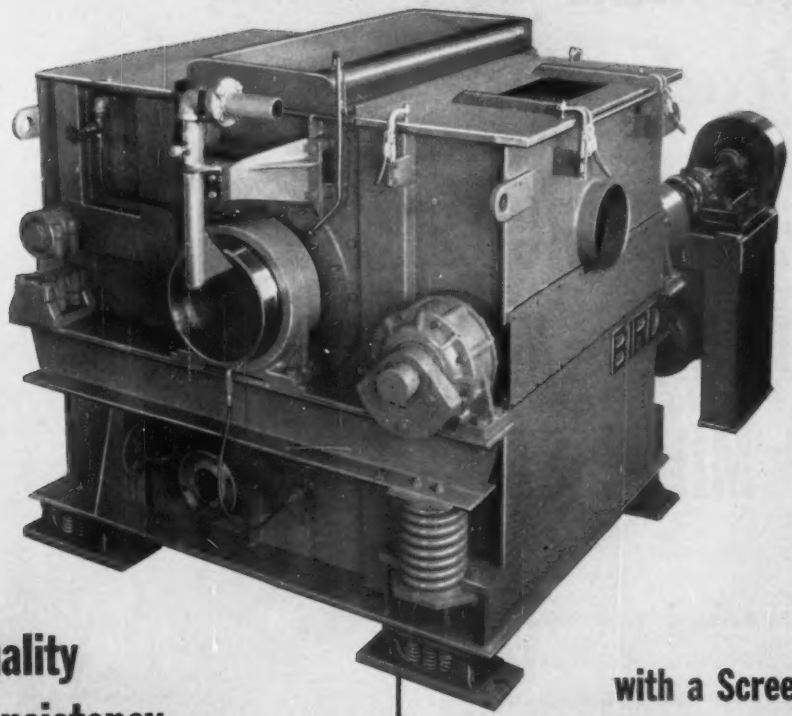
Promotions at Crown-Z

DR. J. S. BARTON (left) has been appointed Director, Packaging Research & Development, Western-Waxide Specialty Packaging Div., C-Z, San Leandro, Calif. He is a graduate of U. of Wash., and Institute of Paper Chemistry, and was formerly manager, Paper Research, in C-Z's Central Research Dept., Camas.

DR. K. G. BOOTH (right) has been promoted to Manager, Fiber Research, Central Research Dept. He was Manager of Administrative Services there.

Promotions at Bogalusa

J. J. GOSS, (left) former Technical Director, is now Assistant to Gen. Supt. at Gaylord Container Div. plant, Bogalusa, La., of Crown Zellerbach Corp. J. E. SAPP, (right) moves up to Technical Director. He was Technical Assistant to the Gaylord board mill superintendent.



HIGH Quality
HIGH Consistency
HIGH Capacity
SLOTTED PLATE SCREENING

with a Screen that's
easy and economical to install
easy and economical to operate
easy and economical to maintain

that's BIRD Vibrotor Screening for you

On **unbleached sulphite** at 1.5% consistency, a Vibrotor Screen with .012″ plates delivers 55 air dry tons per day.

On **bleached sulphite** at 1.7% through .012″ plates — 68 tons.

On 1.6% **unbleached kraft** through .012″ plates — 58 tons.

On 1.9% **bleached kraft** through .012″ plates — 80 tons.

On 1.7% **semi-chemical** through .018″ plates — 86 tons.

On 2.0% **board filter** through .020″ plates — 110 tons.

On 1.7% **newsprint** through .014″ plates — 83 tons.

On 1.9% **deink stock** through .012″ plates — 148 tons.

The Vibrotor Screen combines high frequency vibration and rotation to put large volumes of high density stock through fine cut slotted plates.

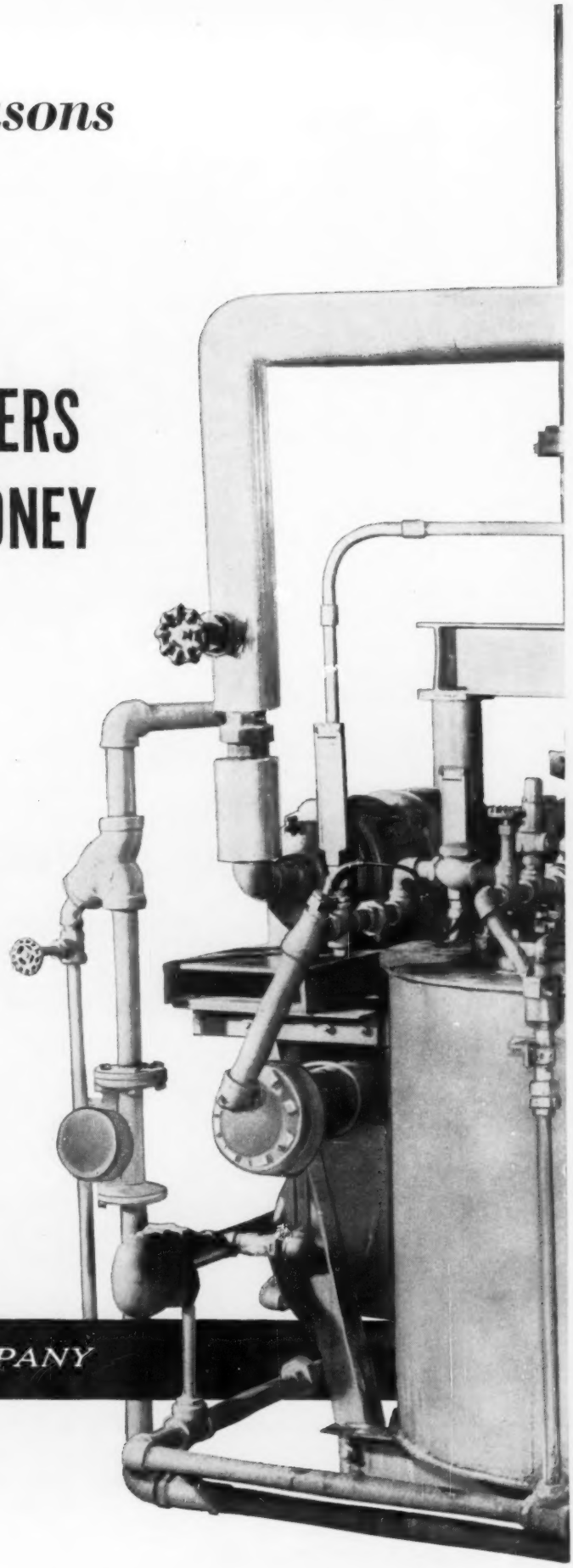
Vibrotor Screen design puts everything outside the screen cylinder — easily accessible. It's a compact, easily installed unit. Whatever piping layout is simplest and best for you — above or below — is the one you can use with the Vibrotor Screen.

BIRD MACHINE COMPANY
SOUTH WALPOLE, MASSACHUSETTS
REGIONAL OFFICES:
Evanston, Illinois • Portland, Oregon • Atlanta, Georgia
CANADIAN MANUFACTURERS of Bird Machinery
Canadian Ingersoll-Rand Co., Ltd., Montreal

*There must be reasons for leadership**

FOR EXAMPLE: HERCULES AUTOMATIC EMULSIFIERS HELP MILLS SAVE MONEY

Hercules has assisted in the industry's progress by designing mechanical improvements for mill operations. The development and extensive use of the Hercules Automatic Emulsifier is typical of these innovations. More than 125 of these units are now in use helping mills lower labor costs, reduce space requirements and obtain greater uniformity of emulsion concentration and quality of size emulsion. If you are interested in learning more about this equipment, one of our technical representatives will be glad to discuss it with you. Just write:



Paper Makers Chemical Department

PP56-6

HERCULES POWDER COMPANY

965 King Street,
Wilmington 99, Delaware

**Hercules is the acknowledged leader in rosin size and other chemicals for papermaking.*

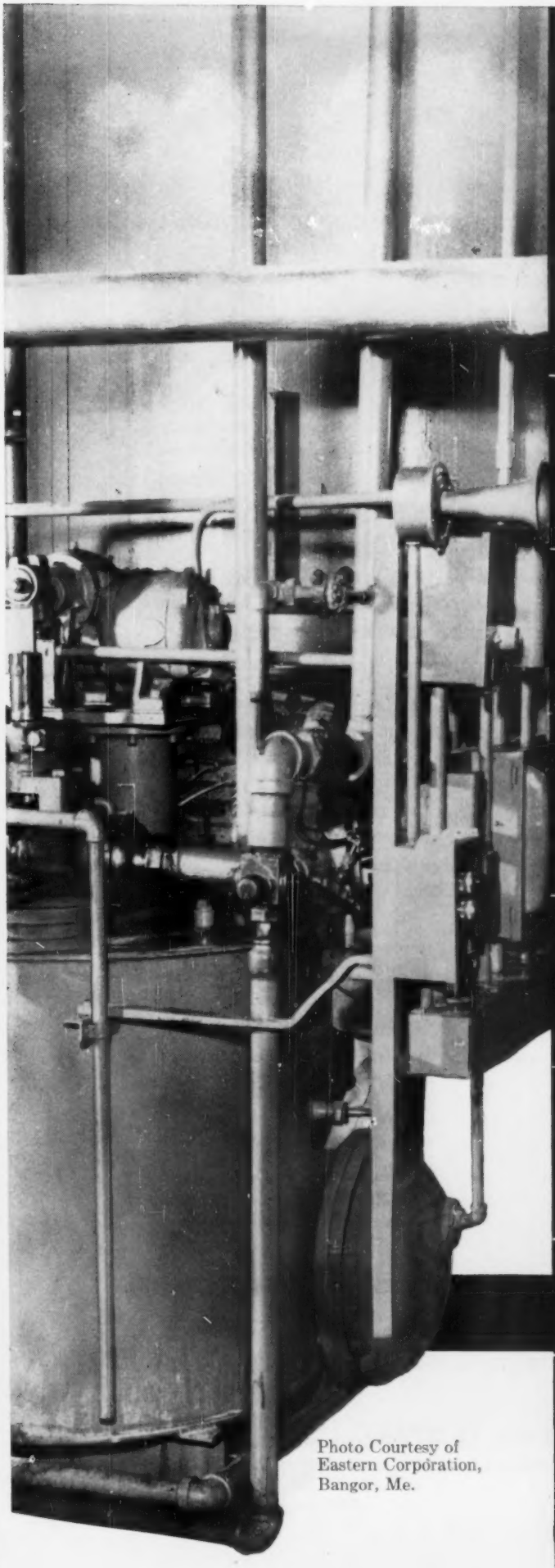


Photo Courtesy of
Eastern Corporation,
Bangor, Me.

SOME REASONS FOR HERCULES LEADERSHIP

UNEQUALED TECHNICAL SERVICE
A staff of more than 50 technically trained men are thoroughly grounded in the cumulative experience of 40 years' mill and laboratory service to the paper industry. Such company experience results in an understanding of the requirements of the paper industry and is reflected in the variety and dependable quality of the products designed to meet them. One of these men is always as near as your telephone.

FORWARD-LOOKING CHEMICALS
From Hercules research come new products designed to anticipate your needs for improved chemical materials. Whether it is a new grade of size based on rosin or a completely new concept, you can look to Hercules for progressive leadership.

UNMATCHED DISTRIBUTION FACILITIES
Hercules maintains by far the largest number of plants and strategically-located distribution points of any rosin size manufacturer. This is your assurance that the product you want will be delivered when and where you want it.

A SIZE FOR EVERY NEED
Hercules' large number of sizing grades means there is one available to meet practically any requirement. For unusual problems, Hercules can formulate a custom-made grade to fit your specific need. Hercules assures you the lowest possible sizing cost by recommending the right grade for your specific needs.

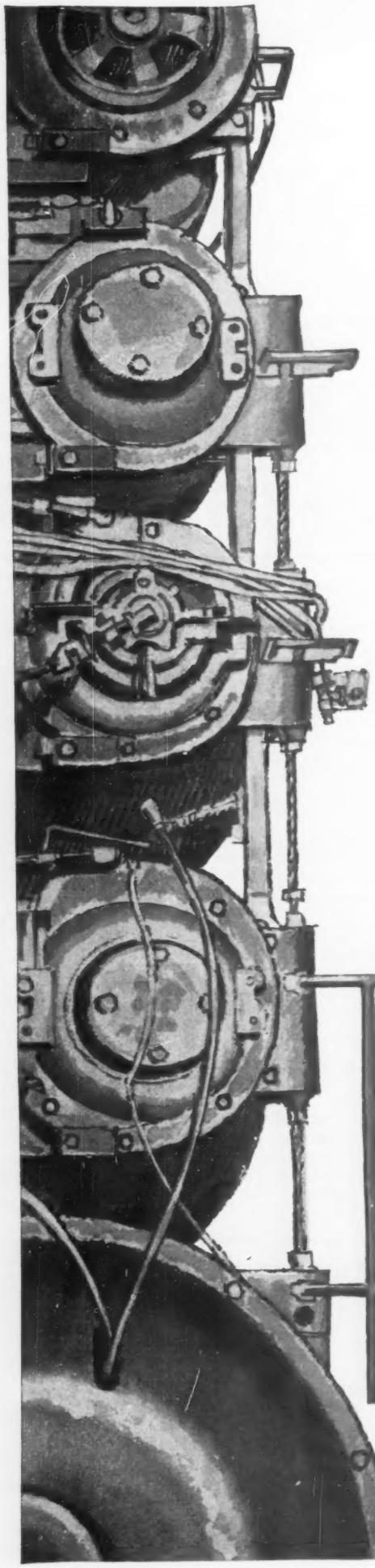
PACE-SETTING RESEARCH
The most extensive research and technical service facilities devoted exclusively to papermaking are maintained by Hercules. The Hercules laboratories are always at the disposal of customers in helping to solve sizing and other papermaking problems.

VARIETY OF PRODUCTS
Hercules is also a leading source of other high-quality papermaking chemicals. Wax emulsions, wet strength resins, defoamers—to name but a few made by Hercules—incorporate the same degree of skilled processing improvements that are found in Hercules'® rosin sizes.

DEPENDABLE SOURCE OF SUPPLY
Hercules' many facilities for producing rosin and rosin size assure you of a thoroughly dependable source of supply.

SAVINGS IN SHIPPING
Hercules has pioneered many improvements in rosin size distribution. The freight and handling savings made possible through the introduction of dry size and higher solids paste size, both in tank truck and tank car shipments, are typical examples.

HERCULES POWDER COMPANY
INCORPORATED



To the mill executive who decides on lubricants—

Three good reasons for specifying STANOIL Industrial Oil

1 The increased demand for paper products results in machinery being operated at speeds higher than rated capacity. Continuous production has placed greater burdens on lubricating oils. Without the best lubrication, equipment failures may occur. Best idea is to specify STANOIL Industrial Oil.

2 Cost of repairs and replacement of parts added to the loss of production, run many times the cost of lubrication. A small investment in STANOIL Industrial Oil is the best possible protection against bearing failures, repair costs and production loss.

3 STANOIL Industrial Oil can be used in a multitude of applications. Inventories of lubricants can thus be reduced and the danger of lubrication failure due to misapplication can be cut or even eliminated.

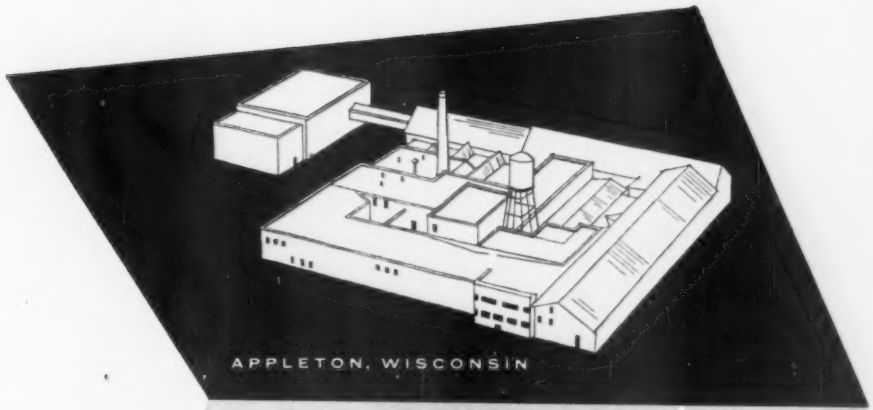
Get more facts about STANOIL from your nearby Standard Oil lubrication specialist. There is one near you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Quick Facts About STANOIL Industrial Oil

- **Stability**—STANOIL's antioxidant gives oil resistance to chemical change, minimizes deposits.
- **Rust Prevention**—Inhibitor in STANOIL "plates out" on metal surfaces, prevents corrosion.
- **Cold Starts**—STANOIL has low pour point. Flows freely from cold start. No need for costly warm ups.
- **Resists Effects of Temperature Change**—STANOIL has high viscosity index, is resistant to temperature change. Lubricates in both high and low temperature service.
- **Has Excellent Demulsibility**—STANOIL is refined to eliminate emulsion problems, contains additive to minimize foaming.

STANDARD OIL COMPANY
(Indiana)

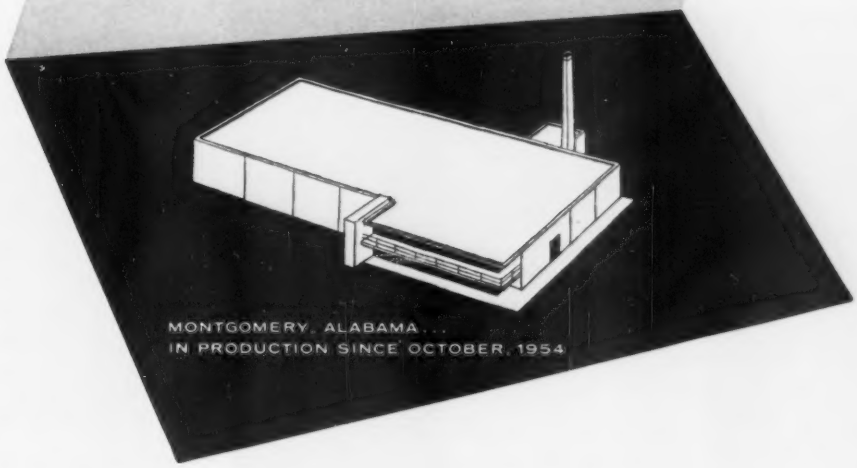
STANDARD



APPLETON, WISCONSIN

Confidence....in the paper industry

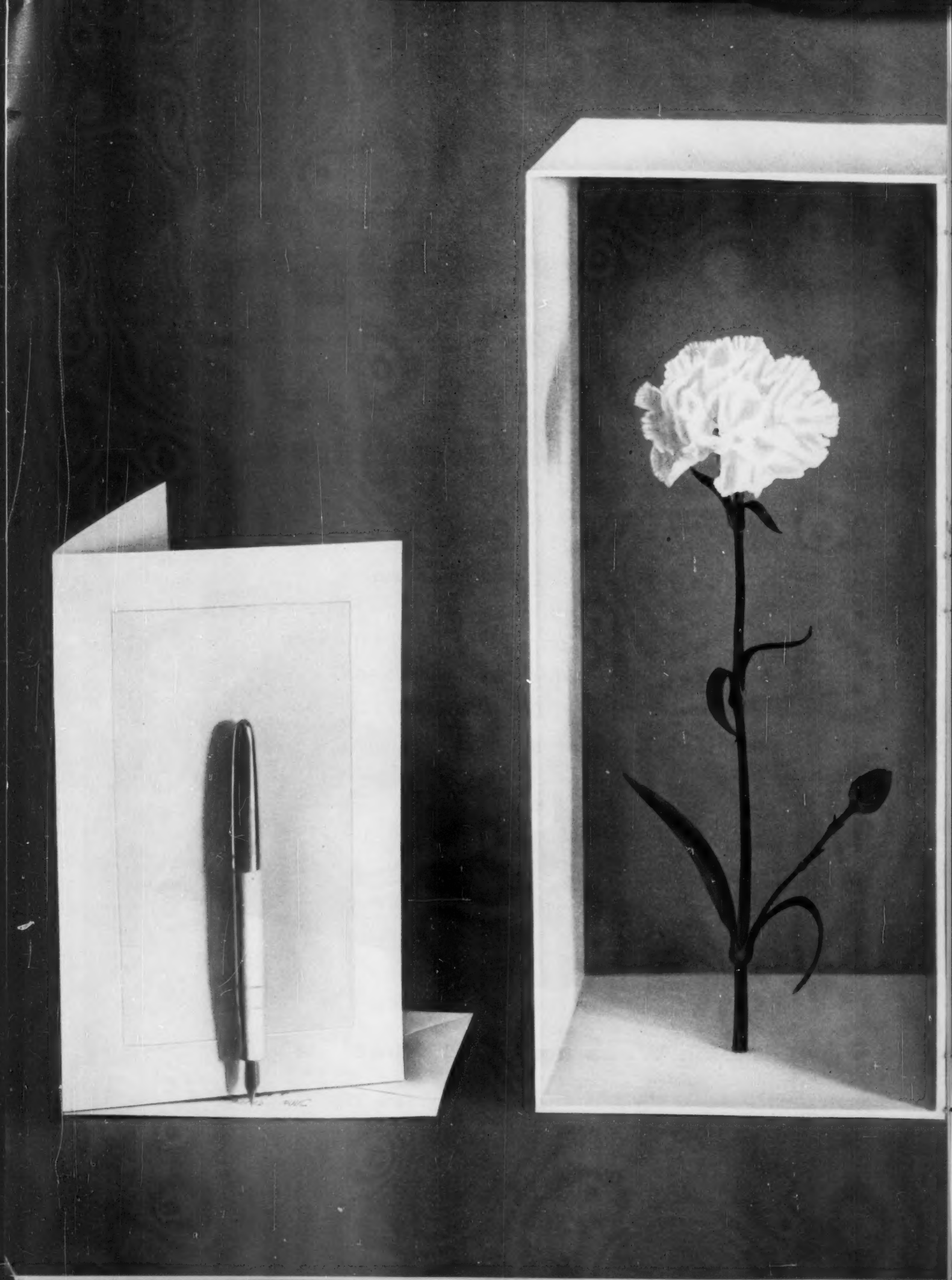
Foresight.....to anticipate changing conditions and requirements of the paper industry with new manufacturing facilities



MONTGOMERY, ALABAMA...
IN PRODUCTION SINCE OCTOBER, 1954

Appleton Wires are Good Wires

Appleton Wire Works, Inc.
GENERAL OFFICES, APPLETON, WISCONSIN



The whitest white you've ever seen

In fine wedding invitations . . . in special packaging and in facial tissues . . . in paper and paper products where special qualities are required . . . a new whiteness will shine. And with this whiteness will go opacity and strength beyond the ordinary. The source of these qualities will be Alberta Hi-Brite, a wood pulp that is unique to this continent.

Hinton, province of Alberta, Canada, was chosen as a site to manufacture this pulp. Surrounding the mill are millions of acres of spruce and lodgepole pine. These two woods combine to produce fine fibers, long and thin and strong enough to resist shattering during the six-stage continuous bleaching process.

This top quality bleached sulphate pulp will be manufactured on this continent... assuring a steady, adequate, dependable supply to industry in the United States and Canada.

The Hinton mill is progressing far beyond expectations and in January of next year the first pulp will be available . . . soon to swell to a volume of 430 tons a day.

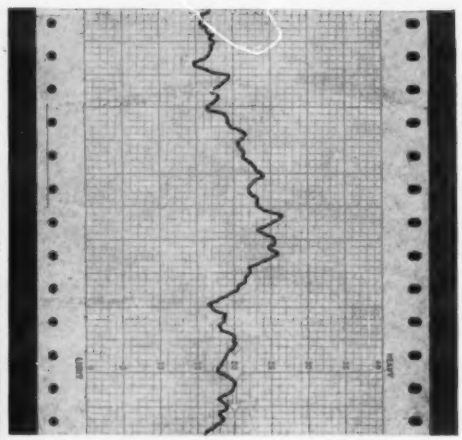
If you are interested in this whiteness, brightness, opacity and strength of pulp for producing your product, write us for more information.

St.Regis
PAPER COMPANY
150 EAST 42ND STREET, NEW YORK 17, N. Y.

Fast...Accurate...Inch-by-Inch Weight Record

Across the Sheet

A single unit can serve 6 or more machines. Can be located anywhere. Strip torn from the reel is fed through measuring slot automatically. Charts serve as instant guide to slice adjustment and, after adjustment, as permanent proof of sheet weight uniformity.



with new FOXBORO SHEET WEIGHT PROFILER

This new Foxboro development gives a *true profile* of weight variations *straight across the sheet* — no confusion with variables in the machine direction. Its *wide open* chart record (each inch represents 10" of paper) makes it easy to identify and correct faulty slice adjustments.

Mill after mill is realizing major gains in paper quality through the use of the Foxboro Sheet Weight Profiler . . . a basic production tool which has never before been available. Send today for new literature: Bulletin PD-105-2 describes the Sheet Weight Profiler; Bulletin PD-108 describes Foxboro measurement and control of the entirely independent basis weight variable in the machine direction.

Among the scores of prominent users

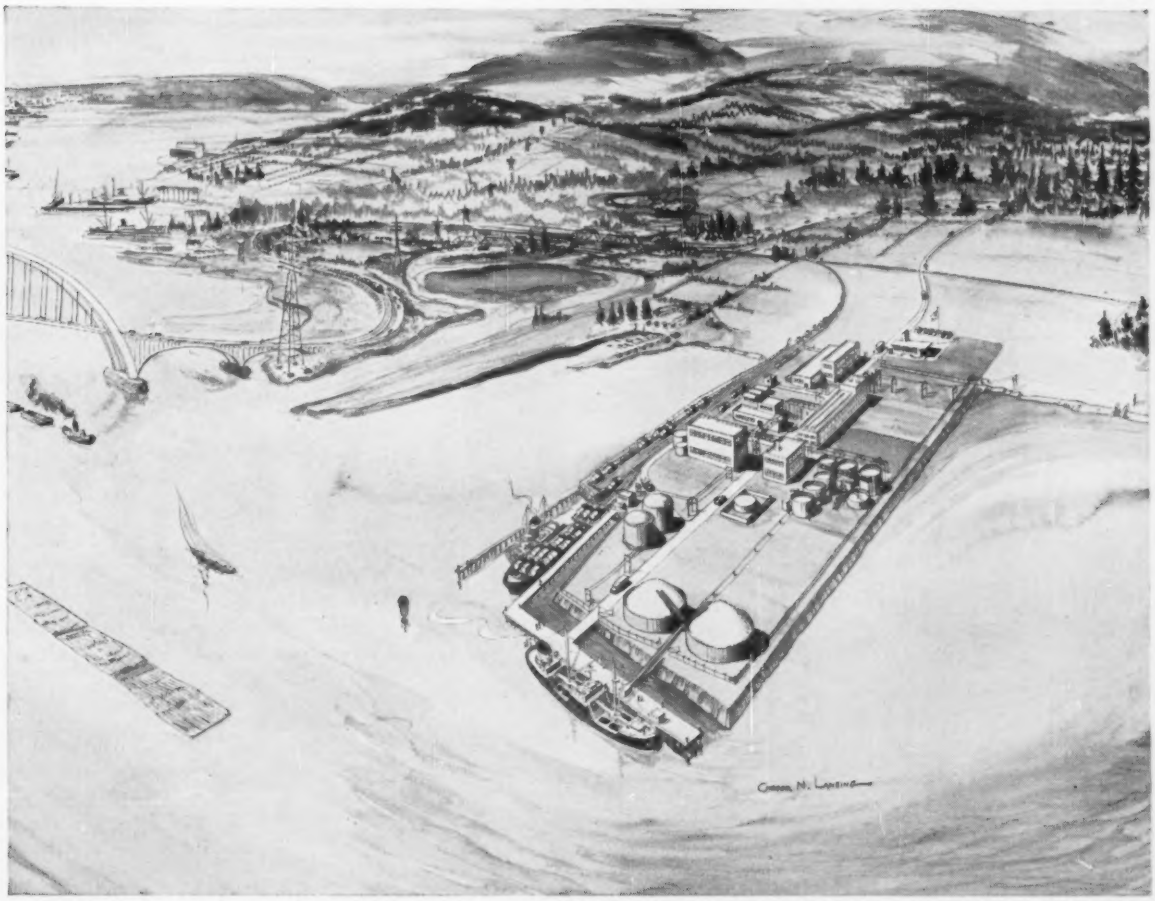
American Box Board Co.
American Writing Paper Corp.
Blandin Paper Co.
Brown Co.
Byron Weston Co.
Consolidated Water Power & Paper Co.
Chillicothe Paper Co.
Fitchburg Paper Co.
P. H. Glatfelter Co.
W. C. Hamilton & Sons, Inc.
Hammermill Paper Co.
Hollingsworth & Whitney Div., Scott Paper Co.
Howard Smith Paper Mills, Ltd. (2 mills)
International Paper Co. (2 mills)
Kalamazoo Vegetable Parchment Co.
The Mead Corp.
National Container Corp. of Wis.
Nekoosa-Edwards Paper Co., Inc.
Nicolet Paper Corp.
Oxford Paper Co.
Paterson Parchment Paper Co.
Quebec North Shore Paper Co.
Rhinelander Paper Co.
Riegel Paper Corp.
Schmidt & Ault Paper Co.
Simpson Paper Co.
Peter J. Schweitzer Inc. (2 mills)
Union Bag & Paper Corp.
Watervliet Paper Co.
West Virginia Pulp & Paper Co. (2 mills)

THE FOXBORO COMPANY, 9912 NEPONSET AVENUE, FOXBORO, MASSACHUSETTS, U.S.A.

FOXBORO
REG. U. S. PAT. OFF.

BETA-RAY SHEET WEIGHT PROFILER

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND



You'll get time-saving delivery by deep-water chemical barge, as well as swift rail service, from the new Hooker plant. To insure deep-sea dockage, a million yards of gravel and soil were scooped from sea bottom and funneled onto plant site.

Will you get the advantages of this new Hooker chlor-alkali plant in 1957?

One year and $11,000,000 from now the chlorine-caustic soda plant sketched here will be a reality.

It will be Western Canada's first domestic source of chlorine and caustic soda.

Here is what this new Hooker plant will mean to you if your company has a mill or plans one in Western Canada:

You will get faster, cheaper delivery of caustic and chlorine over a shorter, more dependable supply line.

There will be a small but real freight saving.

You will be able to draw more timely, more flexible technical assistance from men who know your industry well.

The new plant, located at North Vancouver, will be part of a distinctly Canadian company, Hooker Chemicals, Ltd.

It is being built by Canadians to serve Canadian industry.

It will use the manufacturing processes and experience of Hooker Electrochemical Company, well known to the pulp and paper industry for fifty years.

If you would like to discuss the new plant and your own needs, or if you would like technical data and assistance on Hooker chlorine and caustic soda, write to Hooker Chemicals, Ltd., 717 Pender St. West, Vancouver 2, B. C.

NOTE: During the construction period at Vancouver, the Hooker plant at Tacoma will continue barge and tank car delivery of chlorine and caustic soda to this area. Another dependable supply of caustic is provided by our storage depot at Vancouver.

—HOOKER ELECTROCHEMICAL COMPANY—
FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.
NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

HOOKER CHEMICALS & PLASTICS

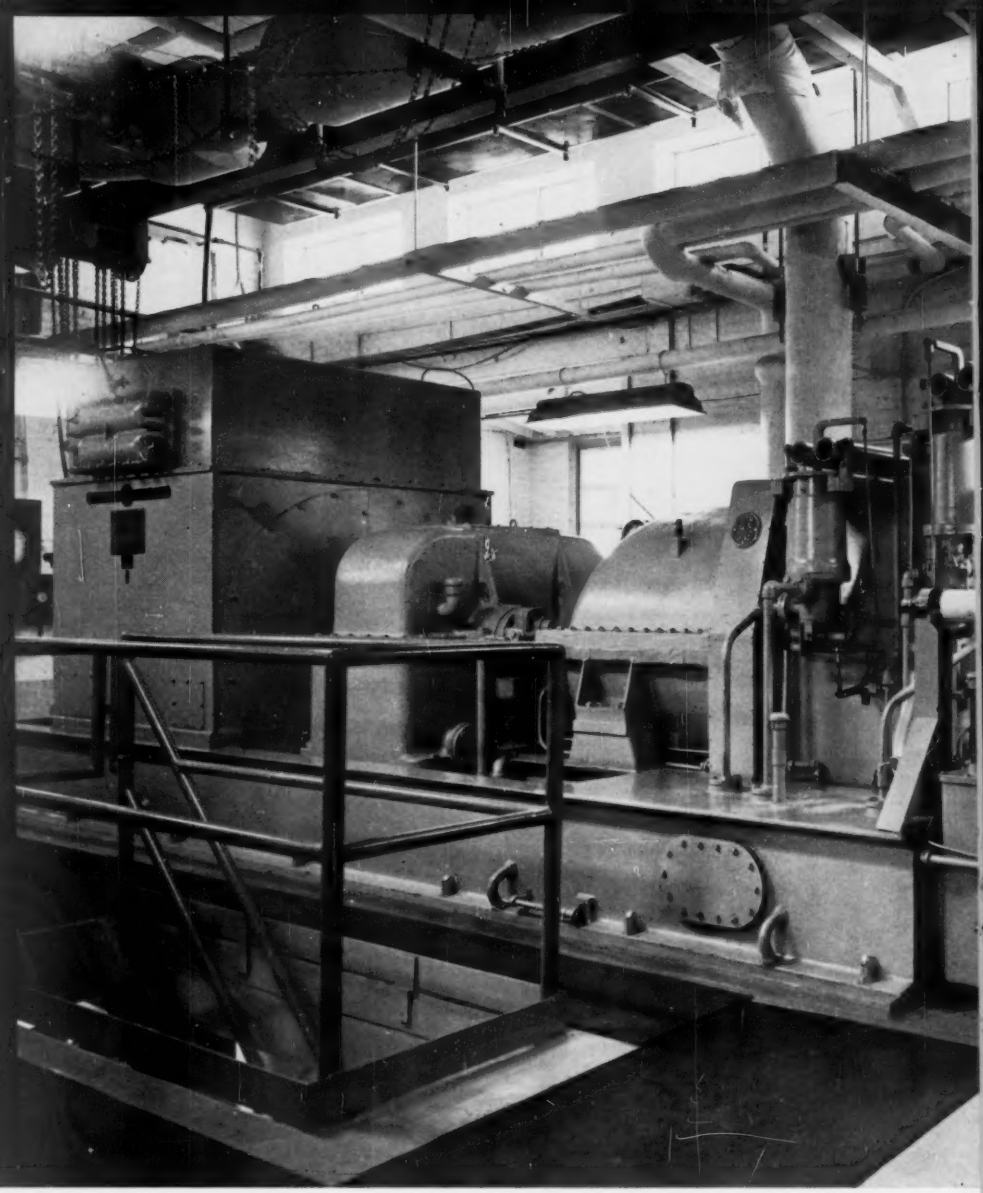
6-589

1. RESEARCH AND DEVELOPMENT

2. MANUFACTURING SKILL

3. ENGINEERING SERVICES

4. UNIT RESPONSIBILITY

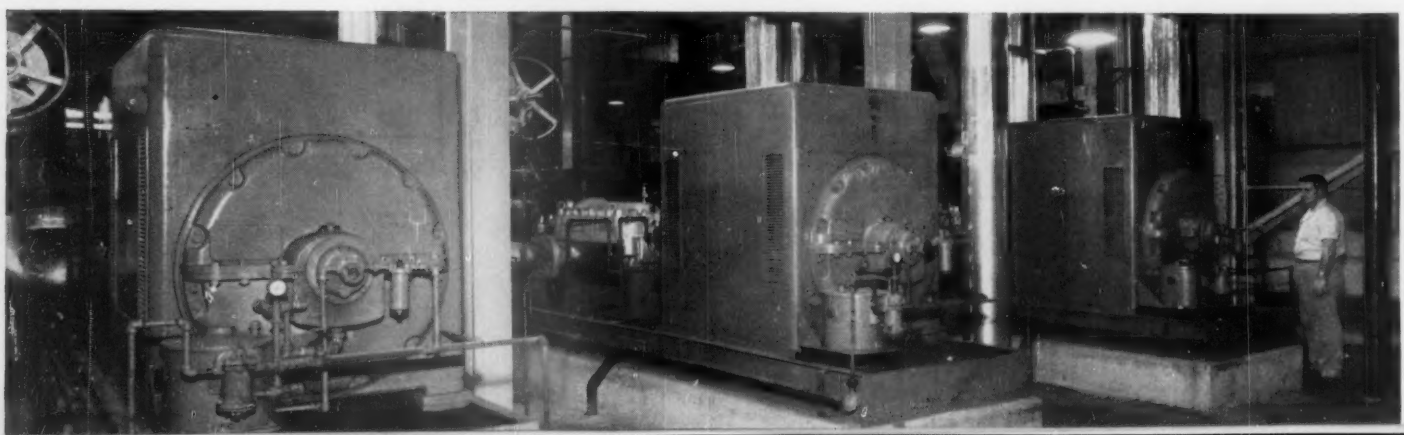


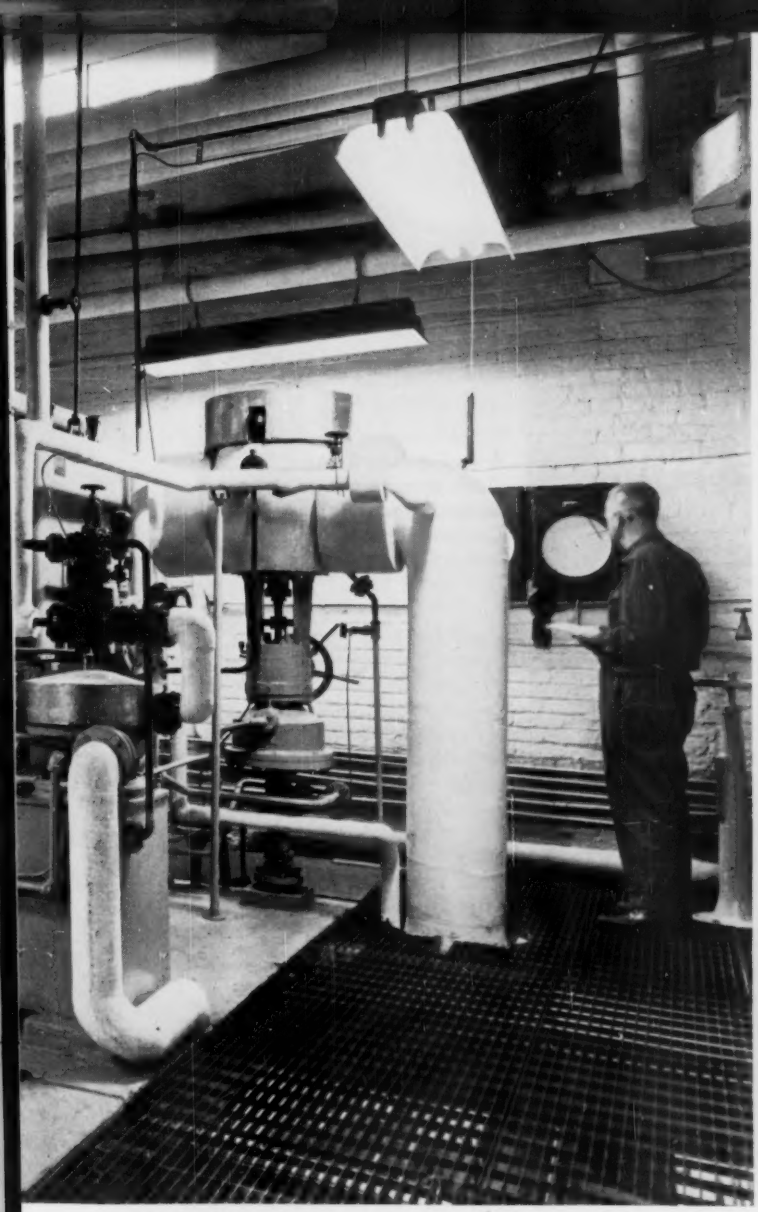
When you expand or modernize your mill, here are . . .

4 Ways General Electric Helps Protect

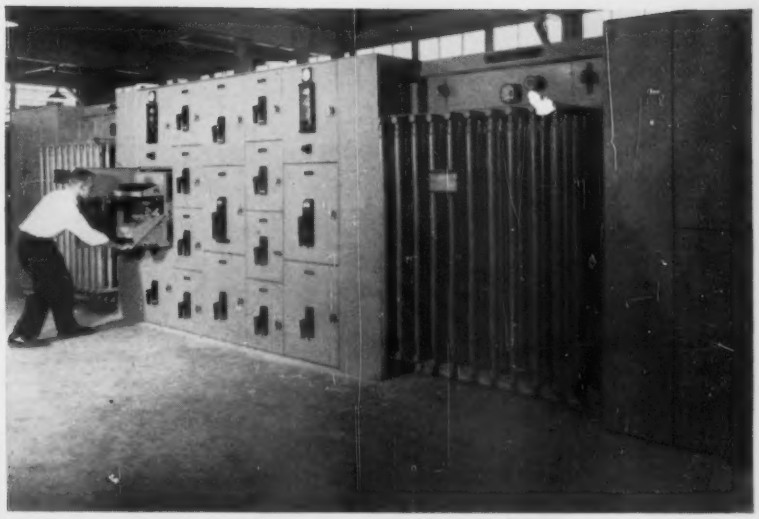
BUILDING-BLOCK DESIGN of General Electric motor control centers permit easy expansion when required. Providing complete running protection for a-c motors up to 200-hp, units are standardized for easy maintenance.

CUBICAL DESIGN of these 1000-hp induction motors driving boiler feed-water pumps saves valuable space. Ventilation system exhausts hot air away from workers and other motors.





ECONOMICAL maintenance features make General Electric multi-valve mechanical turbine ideal for many mill drives. Mill efficiency is increased by re-using low pressure steam in paper-making process.



LOWER INSTALLATION COSTS are possible with compact General Electric load-center unit substations because they are factory assembled and shipped ready to connect into your system.

SHORT CIRCUIT PROTECTION for your mill auxiliary motors is obtained with space-saving Limitamp* controllers. Control is especially suited where motors are stopped and started repeatedly.

*Registered Trade-mark of General Electric Company

Your Electrical System Investment

THE LARGE CAPITAL INVESTMENT required to modernize or expand your paper production, and the need for greater system flexibility and less maintenance are important factors in your choice of mill electrical equipment. Here's how General Electric helps you meet your production requirements and protect your electrical equipment investment.

1. RESEARCH AND DEVELOPMENT: 40 General Electric laboratories throughout the country work to assure the most advanced design and construction for your electrical apparatus.

2. MANUFACTURING SKILL: 77 years of manufacturing experience and a backlog of skilled labor help provide quality engineered and manufactured products.

3. ENGINEERING SERVICES: G-E engineering services are available to you and your consultants to help plan, select, install and maintain your engineered electrical system.

4. UNIT RESPONSIBILITY: General Electric provides one-source supply of all the components in your mill's electrical system, plus engineering help in the design, installation, and start-up.

FOR COMPLETE INFORMATION on General Electric engineered electrical systems and equipment, contact your General Electric Apparatus Sales Office and write for bulletins GED-1966C "Process Electrical Equipment," and GED-2244 "Engineering Services," to General Electric Co., Section 681-15, Schenectady, N. Y.

Engineered Electrical Systems for Paper Mills

GENERAL ELECTRIC

THIS ENGINEERING CATALOG CAN

SAVE YOU MONEY

ON YOUR STAINLESS PROCESS LINES!

SPEEDLINE FITTINGS ARE CARRIED IN STOCK BY
DISTRIBUTORS FROM COAST TO COAST

LEADING MILLS USE "SPEEDLINE FITTINGS"

(Partial Listing)

The Brown Co.
Brunswick Pulp & Paper Co.
Camp Manufacturing Co., Inc.
Central Paper Co.
Container Corporation of America
Fibreboard Products, Inc.
Fitchburg Paper Co.
Great Northern Paper Co.
Hammermill Paper Co.
International Paper Co.
Kennebec Pulp & Paper Div., Hudson Pulp & Paper Corp.
Kimberly Clark Corp.
Marinette Paper Co.
The Mead Corp.
New York & Pennsylvania Co., Inc.
Puget Sound Pulp & Timber Co.
St. Regis Paper Co.
Scott Paper Co.
Simpson Paper Company
Valley Paper Co.
The West Jersey Paper Mfg. Co.
West Tacoma Newsprint Co.
West Virginia Pulp & Paper Company
Westfield River Paper Co., Inc.
Weyerhaeuser Timber Co.

Add your name to this list.

GET THE COMPLETE FACTS

... plus important engineering data on how you can

- Cut Materials Cost as Much as 50%!
- Reduce Design Time and Labor Costs to a New Low!
- Get Greater Flow Capacity—Higher Flow Efficiency!
- Solve Corrosion and Contamination Problems!

HORACE T. POTTS COMPANY
550 E. ERIE AVENUE, PHILA. 34, PENNA.

Please send me a copy of Speedline Fittings Catalog, at no obligation.

NAME.....

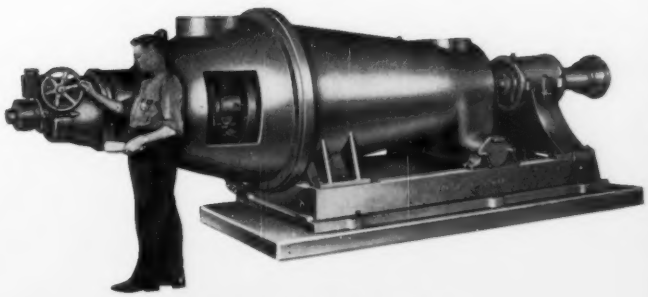
TITLE.....

COMPANY.....

ADDRESS.....

Speedline® **STAINLESS STEEL FITTINGS**

Manufactured by HORACE T. POTTS COMPANY, 550 E. Erie Avenue, Phila. 34, Penna.



LEVIATHAN Our largest Jordan

MAJESTICS
at Weyerhauser, Longvie

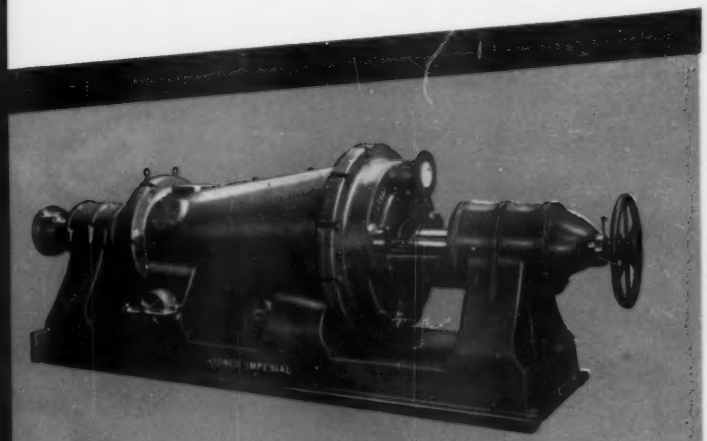
Meet the members of a *Famous Family*

Jones JORDANS

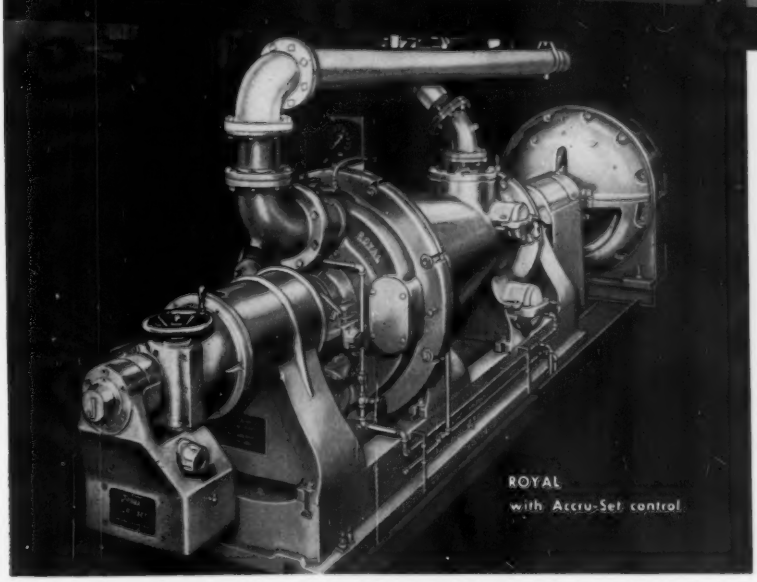
The Jones "family" of nine Jordan sizes, from Leviathan to Midget — permits selection of exactly the right size and type to handle every requirement, with a wide choice of fillings to meet any condition.

For full details, write for Bulletin EDJ-1007A.

Built into all Jones Jordans are exclusive features developed from more than a century of service to paper mills the world over: streamline design, maximum operating efficiency, ease of maintenance and low operating cost. Ask your Jones representative about additional features.



IMPERIAL Popular "work horse"



ROYAL
with Accru-Set control

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Jones

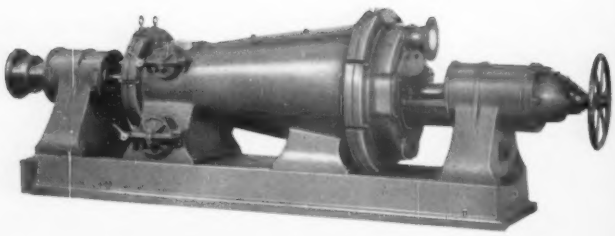
E. D. JONES & SONS COMPANY
Pittsfield, Mass.

In Canada: The Alexander Fleck, Ltd., Ottawa

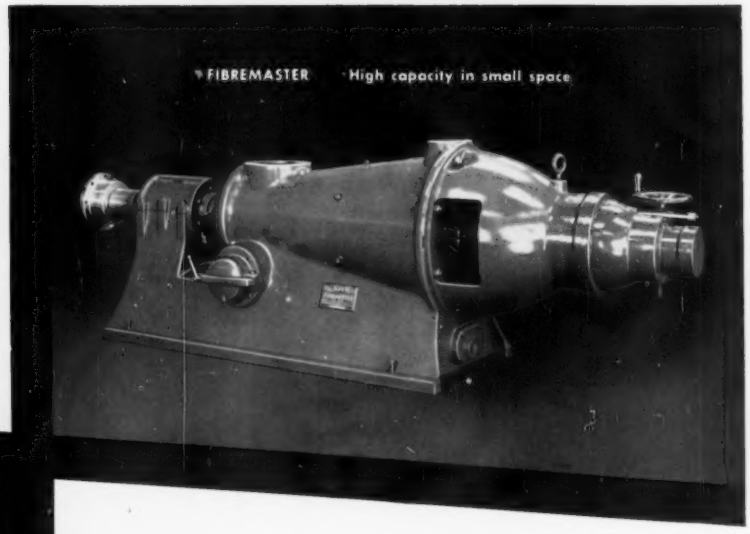
Export Agents:
CASTLE & OVERTON, INC.
New York 20, N. Y.

Foreign Licensees:

FRANCE	Batignolles-Chatillon
SPAIN	Gabilondo
ITALY	de Bartolomeis
JAPAN	Mitsubishi



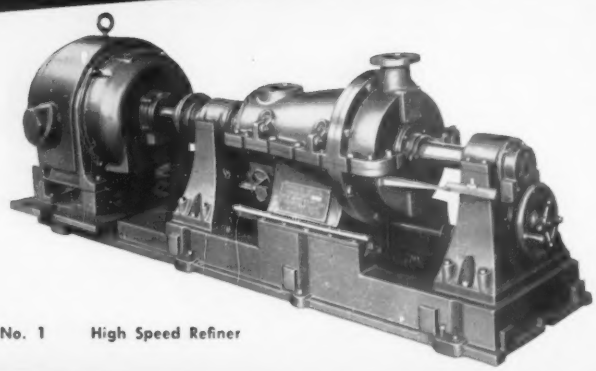
STANDARD New design features



FIBREMASTER High capacity in small space

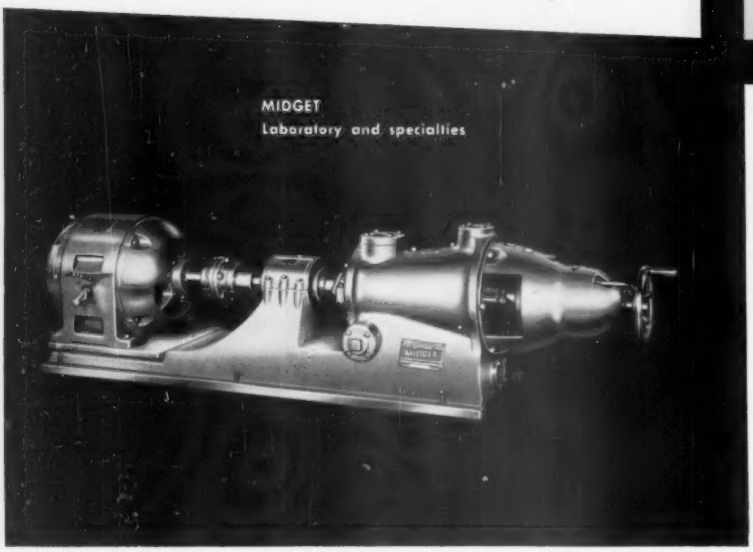
There's a Jones JORDAN for every mill need

Mountings for all Jones Jordans are so designed that bearings with their housings form self-contained units which remain on the shaft—need not be removed when plug is withdrawn. On most models, there is a choice of plug adjustment mechanism: hand wheel, worm gear, or completely automatic Accru-Set — a Jones exclusive.



No. 1 High Speed Refiner

STOCKMASTER
Newest family member



MIDGET
Laboratory and specialties

Jones

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

E. D. JONES & SONS COMPANY

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JAPAN	**Mitsubishi**

DOW

Considerable mill data on the effectiveness of Separan 2610 is now available. Results overwhelmingly agree that this high-speed flocculant promises money savings and improved sheet properties in numerous operations of pulp and paper manufacture. Read for yourself the findings, as . . .

MILLS REPORT

on Separan 2610, the new flocculating agent

FILLER RETENTION—By adding 0.8 pound of Separan 2610® per ton of finished paper *(45-pound envelope stock)*, one mill reduced clay content from 550 pounds to 350 pounds. Ash increased 6.5%. Opacity went up 3 points to 90. Net savings: about $3.20 per ton of finished paper. In addition, sheet properties were improved. *On 50-pound offset*, another mill reduced clay content in the furnish by 25% and cut titanium dioxide requirements as much as 35% with a 0.25-pound addition of Separan 2610 per ton. Ash remained constant at 12%; opacity rose from 90 to 91. *On 31.5-pound hi-grade offset*, 0.5 pound of Separan 2610 per ton of paper raised ash to 9.3%, a 2.2% gain. From 92, opacity went to 95. *White patent coated news*—Report shows 0.5 pound per ton of board on a cylinder machine cuts fiber and filler in white water by 25% to 40%.

SAVE-ALLS — On flotation type, 1 ppm Separan 2610 saved $45 a day on flocculant cost for white water from publication-paper machine. Decreased sensitivity to pH changes was also indicated. In white water from an uncoated printing-paper machine, another mill overcame excessive solids content in the effluent: Separan 2610 at 3 ppm brought a 3-fold reduction, plus improved recovery and operation. *In a drum type vacuum save-all*, Separan 2610 treatment improved operation and increased capacity at 1 ppm.

PROCESS MILL WATER—Mill reports increased capacity of 50% with 0.15 ppm Separan 2610. Flocculant costs reduced 30%.

CLARIFICATION OF WHITE LIQUOR—Great improvements reported here, too, with only 0.02 pound to 0.03 pound of Separan 2610 per ton of lime. On a laboratory scale, this remarkable new flocculant also shows promise in white-water and de-inking waste clarification at 0.05 to 5.0 ppm loadings; in lime mud filtration at 1.0 to 10.0 ppm loadings; and in retaining fines as a wet-end additive at 0.1 to 0.5 pound per ton of paper.

ELIMINATES MANY OLD PROBLEMS—A synthetic flocculant of constant uniformity, Separan 2610 is effective over a wide pH and temperature range, is noncorrosive and presents no hazard in normal use. It also requires no preservative . . . and is especially easy to prepare and apply. A new disperser enables you to dissolve large amounts without a mechanical mixer!

A COMPLETE REPORT has been prepared, titled "Separan 2610 in the Pulp and Paper Industry". For your copy and/or a test sample of this new flocculating agent, write THE DOW CHEMICAL COMPANY, TECHNICAL SERVICE AND DEVELOPMENT, Dept. SC937G-I, Midland, Michigan.

New booklet reports more facts and figures on mill results. Write for your free copy today!

you can depend on DOW CHEMICALS DOW

your "rolling pipe line"

More than 2600 Olin Mathieson tank cars are in service every day shuttling between a score of production points and our customers to assure dependable delivery of Mathieson Chemicals.

In a sense, they form a "pipe line" connecting major consuming and producing areas. And, they perform the important function of balancing out local shortages and surpluses.

If you're ever caught short of an essential chemical raw material, the flexibility of a multi-plant producer can prove invaluable. Our "pipe lines" carrying caustic, chlorine, ammonia, sulphuric acid, methanol and organics may be the answer to your supply problems. Talk it over with an Olin Mathieson representative soon.

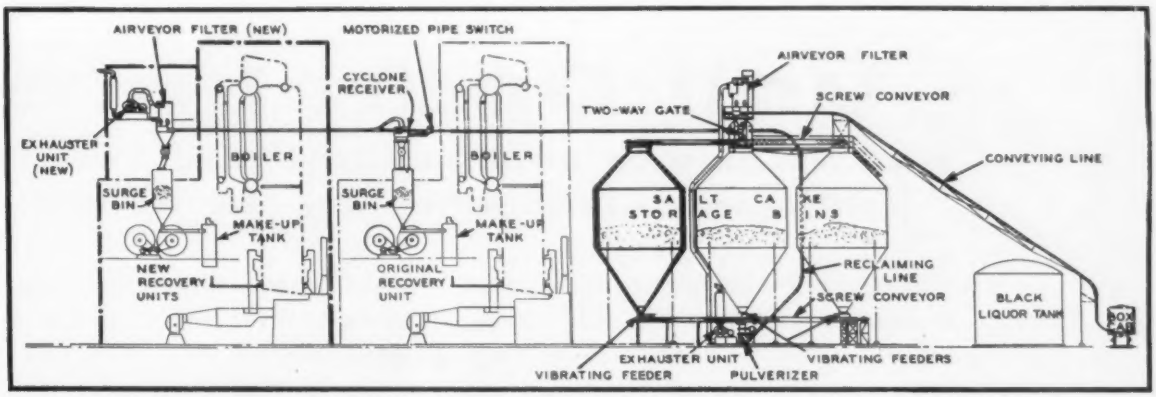
MATHIESON CHEMICALS

OLIN MATHIESON CHEMICAL CORPORATION

INDUSTRIAL CHEMICALS DIVISION • BALTIMORE 3, MD. 3954

MATHIESON

INORGANIC CHEMICALS: Ammonia • Bicarbonate of Soda • Carbon Dioxide • Caustic Potash • Caustic Soda • Chlorine • Hydrazine and Derivatives Hyprochlorite Products • Muriatic Acid • Nitrate of Soda • Nitric Acid • Soda Ash • Sodium Chlorite Products • Sulphate of Alumina • Sulphur (Processed) Sulphuric Acid • ORGANIC CHEMICALS: Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Glycol Ether Solvents • Ethylene Dichloride • Dichloroethylether Formaldehyde • Methanol • Sodium Methylate • Hexamine • Ethylene Diamine • Polyamines • Ethanolamines • Trichlorobenzene • Polychlorobenzene • Trichlorophenol



Additions: Storage bin, center, shown in heavy line, and screw conveyors to and from bin. Left—recovery units, Airveyor exhauster unit and filter for reclaiming from storage for delivery to recovery units.

For expansion at St. Regis . . . Fuller had the answer

The above drawing illustrates how the St. Regis Paper Company, Jacksonville, Florida, increased its storage and conveying facilities at minimum cost and with little interruption in production.

Original Airveyor conveying system for both unloading salt cake from cars to storage and reclaiming from storage for delivery to recovery unit.

PROBLEM No. 1:
Original installation
Year 1952

Unload salt cake from box cars, convey to storage, reclaim from storage and deliver to recovery unit. Mill capacity, 300 tons of pulp a day.

SOLUTION:

The Airveyor conveying system was selected and installed to perform all of the above functions . . . a dual system using a single exhauster unit and filter for both unloading and reclaiming . . . only one of these operations to be performed at any one time. This method of operation was sufficient for all plant requirements at capacity then required.

PROBLEM No. 2:
Expansion
Year 1955

Increase of mill capacity from 300 tons to 1300 tons of pulp a day. This increase demanded additional recovery units, storage, and conveying alterations.

SOLUTION:

To continue using the original Airveyor system meant taxing the unit to its ultimate capacity, as well as congestion in the operation of the recovery unit, with little or no factor of safety. In order to provide satisfactory overall operation at all times, it was decided to divorce the reclaiming system and provide separate units, one for unloading and the other for reclaiming. This allows the operator of the recovery unit freedom of operation without interfering with the unloading operation. This change was accomplished by retaining the original exhauster and filter for unloading, extending the screw conveyors to serve the additional storage. An additional filter, exhauster, and conveying line transformed the reclaiming system to a separate and distinct unit. These changes to the Airveyor were accomplished at minimum expense, with very little interruption in production during alterations.

FULLER COMPANY GENERAL AMERICAN TRADE MARK

A-239
3483

Fuller
. . . pioneers in harnessing AIR

FULLER COMPANY
128 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Chicago · San Francisco · Los Angeles · Seattle · Kansas City · Birmingham

Unit Operations

provide diverse application in pulp and paper mill process and effluent water treatment

Regardless of whether treatment is motivated by a need for product recovery, water reclamation or pollution abatement, investigation of Dorr-Oliver unit operations can point the way to the *proper* solution of these problems.

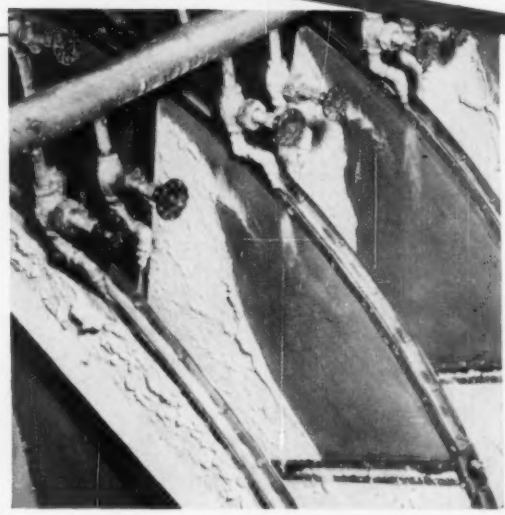
The following is but a brief outline of the complete Dorr-Oliver equipment line for treatment of solids in water. Inherent in their design is the concept of versatility and economy necessary to meet the demands of pulp and paper manufacturers.

FILTRATION

Vacuum Savealls — Available both in drum type and disc type units.

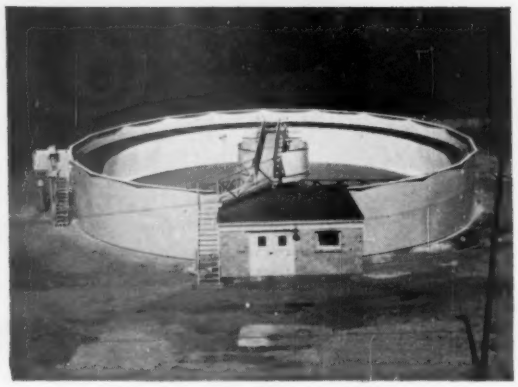
The American* Saveall... ideal where large filtering area is required. Disc type design requires a minimum of floor space and provides a wide range in capacity.

The Oliver Saveall is a drum type vacuum filter designed to meet practically any mill condition. This unit can handle wet broke along with white water without a separate system. Write for bulletin No. 701-R.



American Disc Type Saveall installed at a northeastern mill. Clearly shown are sluicing jets peeling and slicing off cake.

SEDIMENTATION

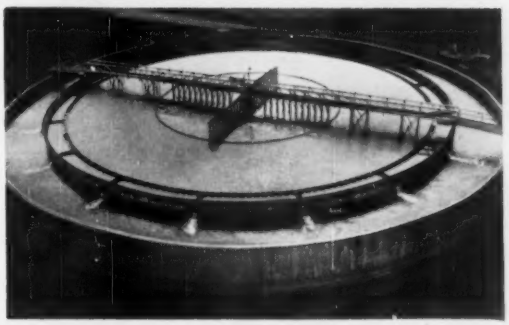


Clarifiers and Thickeners — Dorr-Oliver manufactures a complete line of sedimentation equipment to provide primary treatment (suspended solids removal and BOD reduction) to general mill effluents, drinking, waste water, etc. Suited principally for use as a primary treatment unit the use of the Dorr Clarifier is a sound starting point for eventual complete biological treatment as well.

Equally adaptable to either steel or wooden tanks and earthen basins, the basic types of the Dorr Clarifier are described in Bulletin No. 6192.

Installed at a mid-western paper mill this 90′ diameter Type S Dorr Thickener provides clarification of 4300 GPM of de-inking wastes containing approximately 0.3% solids.

CHEMICAL COAGULATION



The Dorrco Clariflocculator* — A combination unit which carries out unit operations of flocculation and clarification in a single tank. High suspended solids removal is possible due to transference of newly formed flocs from flocculation compartment to clarification compartment without disintegration and the even distribution and rapid settling in clarification section. Recently published Bulletin No. 6801 gives complete information.

Treating raw river water, this Dorrco Clariflocculator Unit installed at a west coast pulp mill supplies 14 MGD of clear process water.

MATERIALS HANDLING

PUMPING, SCREENING, MIXING

The Oliver Diaphragm Slurry Pump . . . air actuated, provides even transmittal of force to diaphragm resulting in maximum life. For removal of sludge from Clarifiers and Clariflocculator Units. Bulletin No. 5000 just off the press outlines this unit along with the complete line of Dorr-Oliver Pumps.

The Dorrco Bar Screen . . . mechanically operated automatically activated unit for removal of large solids from waste flows. Bulletin No. 6400.

The Dorrco Flash Mixer . . . a high speed motor-driven mixing unit. Provides complete, rapid diffusion of chemicals and raw water to avoid floc formation in mixing chamber proper. Bulletin No. 6971.

Oliver Diaphragm Slurry Pump, No. 2 size.

BIOLOGICAL TREATMENT

Activated sludge process as employed to make an 80-90% B.O.D. reduction in mill effluent at a large southern paper mill. Major equipment includes a Dorr Thickener and two Currie Claraetors.

There's no "cure-all" for this type of treatment . . . but the Dorr-Oliver store of diversified equipment and experience adds up to the *correct* kind of solution.

Dorr-Oliver biological processing equipment available includes . . . The Dorrco Distributor for Trickling Filtration . . . a self-propelled unit, equally applicable to low or high-rate treatment for oxidizing organic matter in solutions. Bulletin No. 6300 describes the combinations of various components available in this unit.

The Dorr Clarifier . . . previously described provides continuous removal of settled solids from clarified raw water.

Bulletin No. 6581 outlines the **Currie Claraetor*** . . . a combination unit providing clarification and aeration in a single tank. A compact economical arrangement for carrying out the activated sludge process.

*T.M. Reg. U. S. Pat. Off.

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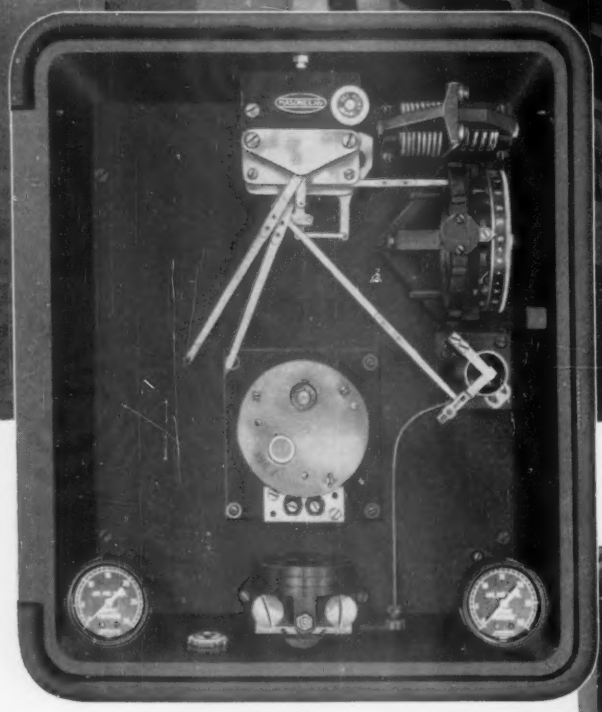
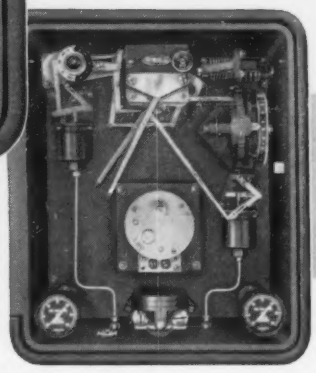
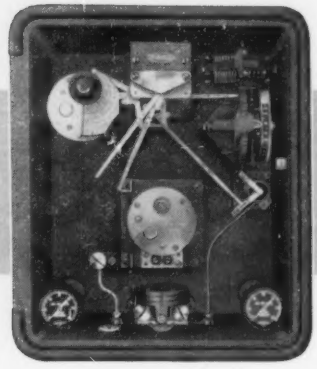


BASIC 60000
PNEUMATIC CONTROLLER

The basic controller provides versatility by combining proportional, differential-gap and on-off control, each with reversible action, in one instrument. Subassemblies may be installed to add the functions of reset and derivative. The exclusive gimbal unit enables you to select type of control and action and to adjust proportional band with one simple setting of the proportional band wheel. Large knurled knobs facilitate adjusting set point, reset rate and derivative time. All settings are made without disturbing the chart.



These are the functions you can perform. Pneumatic Set may be added to provide pneumatic positioning of the set point. Remote operation uses output pressure from another controller, a transmitter or a manually adjusted loading regulator.



Time Schedule may be added to position set point in accordance with a process-time schedule. Cam operation and chart record are in same instrument. Separate cam drive permits recording two or more cycles during one chart rotation.

THE VERSATILE 60000
ADVANCED LINE OF MASONEILAN CONTROLLERS

Complete series of pneumatic controllers features accuracy, dependability and simplicity — low over-all cost.

The answer to measuring or controlling your process can very likely be found in these Masoneilan Controllers. Many different functions can be performed, separately or in combination, using this advanced 60000 series. The features and flexibility are noteworthy:

- Unit subassemblies for independent servicing or interchange.
- Gimbal unit provides four combinations of primary and feedback motion.
- All air passages manifolded — with plug in connections for all pneumatic units.
- Modern design, tailored appearance — easy to mount and to service; recording or indicating types.

Select the right combination for your process control from the variety of models shown here. Then, plan to standardize on this advanced line — it will save you money on over-all instrument investment and pay-off in dependable performance. Contact the Masoneilan representative nearest you, or write:
Mason-Neilan Regulator Co., 1301 Adams St., Boston 24, Mass.

MASON-NEILAN MASONEILAN

Division of Worthington Corporation

27 NAHATAN STREET, NORWOOD, MASSACHUSETTS

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis
Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati
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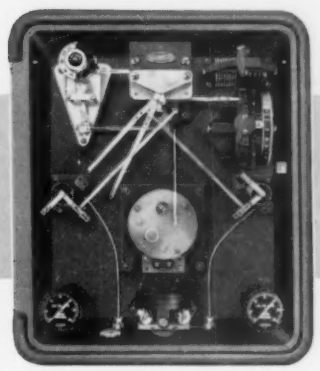
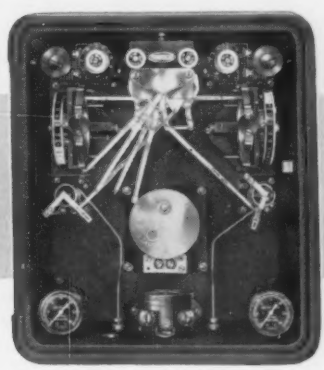
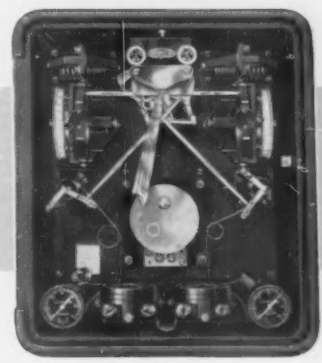
Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham
New Orleans • Dallas • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto



Differential mechanism is added to position set point by one of two similar variables between which a differential is being maintained by controller; or by one of two dissimilar variables between which the controller is maintaining a relationship.



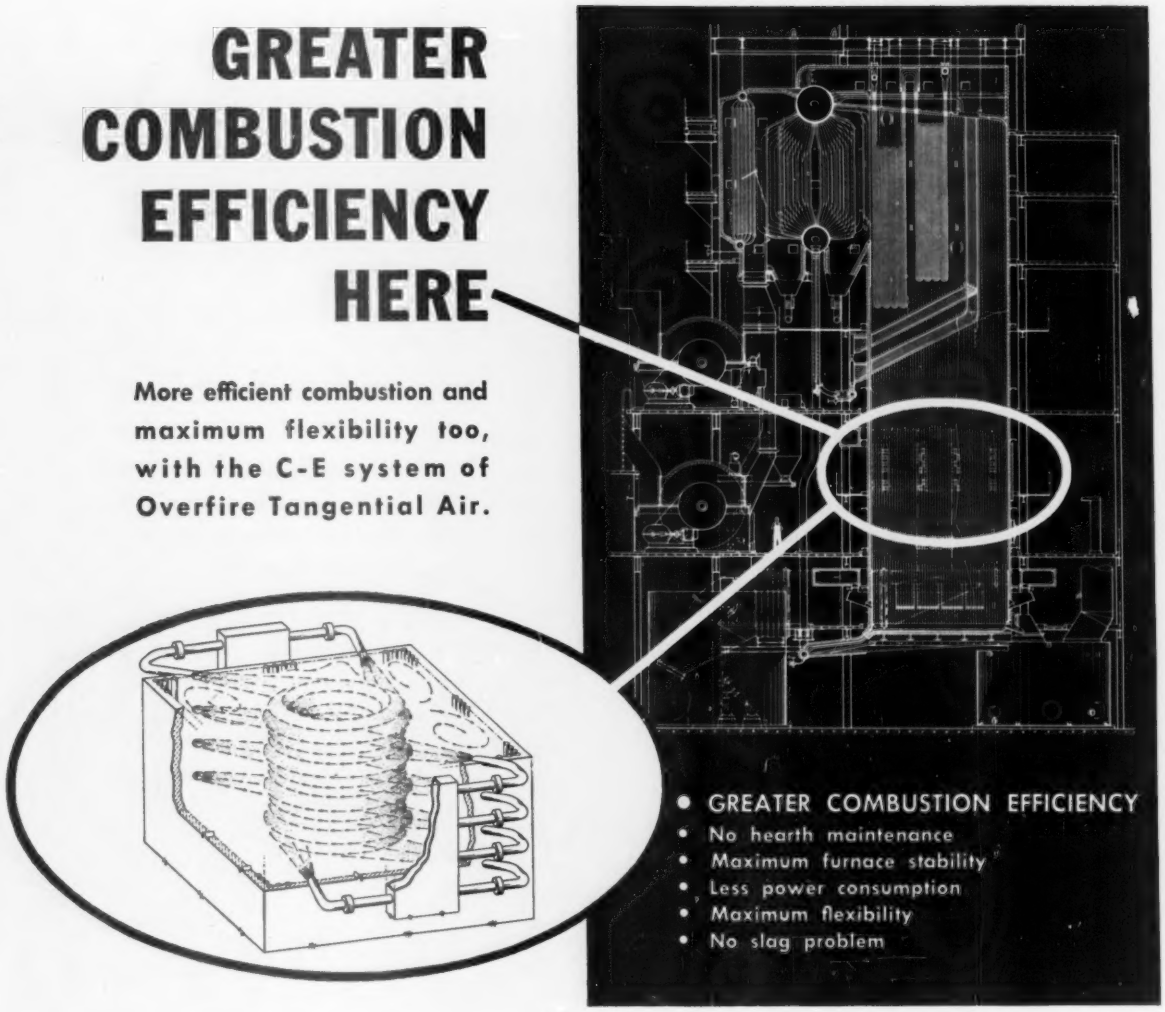
The Dual Selector Controller consists of two complete control mechanisms which actuate a common pilot interchangeably, according to process requirements. It is used where two related variables may be controlled by a single valve.



Dual Controller has two complete units, including primary elements, in one case. Controls two similar or dissimilar variables and either or both may be recording or indicating. Duplex Controller has two mechanisms but one primary element. May be two controllers or controller and transmitter.

GREATER COMBUSTION EFFICIENCY HERE

More efficient combustion and maximum flexibility too, with the C-E system of Overfire Tangential Air.



The C-E Recovery Unit has greater combustion efficiency because of its Overfire Tangential Air System. By intimately mixing the fuel with an adequate supply of secondary air, combustion is completed more rapidly and effectively.

As illustrated above, secondary air is introduced into the furnace tangentially above the black liquor sprays. Thus the gas velocity upward through the sprays is decreased and ash entrainment in the gases leaving the furnace is reduced. The combustion process is completed in the lower part of the furnace, furnace exit gas temperature is reduced and slag build-up on the convection surfaces is reduced to a minimum.

This design feature is one result of Combustion's continuing efforts to make a good product better. Through the years, these efforts have produced many similar advantages. From the smallest to the world's largest, every C-E Recovery Unit offers you consistently high reduction performance, uniform fuel bed, no hearth maintenance, efficient burning, a cleaner boiler, uniform gas flow, less steam for soot blowing, cleaner superheater surface, less power consumption and minimum stack losses. Good reasons all, why — before you buy — you should *SEE* C-E.

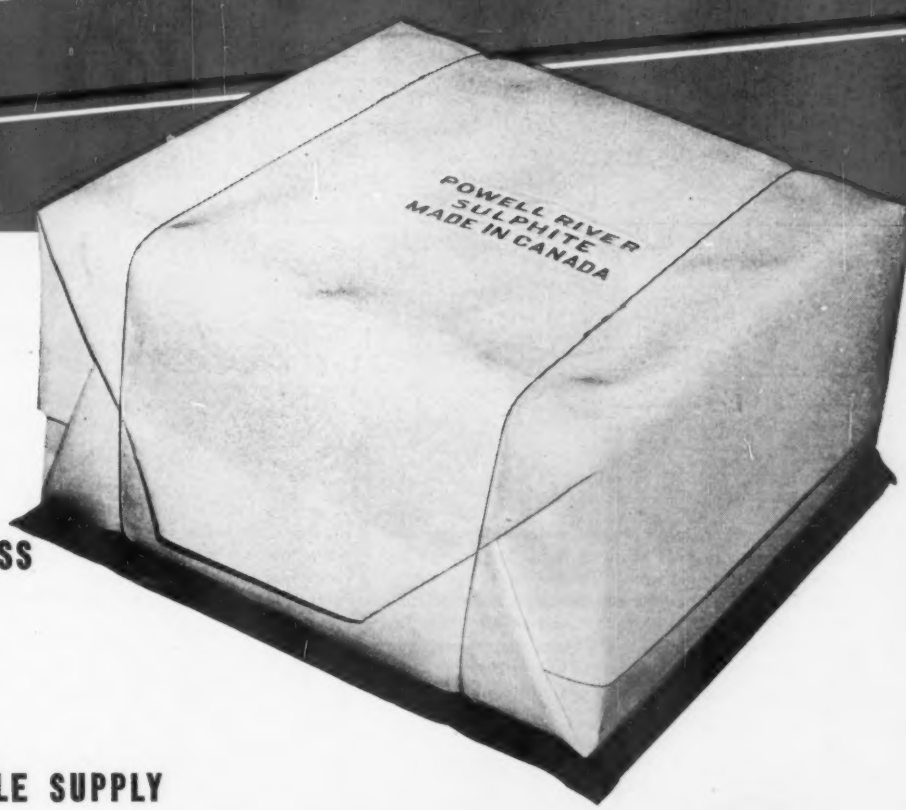
COMBUSTION ENGINEERING

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

B-970

Steam Generating Units • Nuclear Reactors • Paper Mill Equipment • Pulverizers • Flash Drying Systems • Pressure Vessels • Home Heating and Cooling Units • Domestic Water Heaters • Soil Pipe

POWELL RIVER UNBLEACHED SULPHITE PULP



★STRENGTH

★COLOR

★CLEANLINESS

★SERVICE

★DEPENDABLE SUPPLY

★ POWELL RIVER SALES COMPANY LIMITED
STANDARD BUILDING VANCOUVER, B. C.

"Thiokol" synthetic rubber, is an organic polysulfide elastomer. One of its many uses is in solid propellents for long range and high altitude missiles. In liquid form, "Thiokol" synthetic rubber mixed with an oxidizer, is poured into specially designed combustion chambers of rockets. It helps to give stability to the fuel charge and resistance to shock. It promotes uniform burning. When the rocket motor is ignited the mixture burns with great intensity and generates large volumes of gas to propel the rocket.

Solid propellents made with "Thiokol" synthetic rubber have proved their value in rockets over liquid propellents in many ways: they are less costly and easier to manufacture—simple and rugged construction makes handling and launching easier and safer—fuel tanks and complicated feed systems are eliminated.

"Thiokol" synthetic rubber is a product containing a high percentage of Sulphur—its name being derived from the Greek words for sulphur and glue. Here is another example of the continually broadening field in which Sulphur is an important and necessary element.

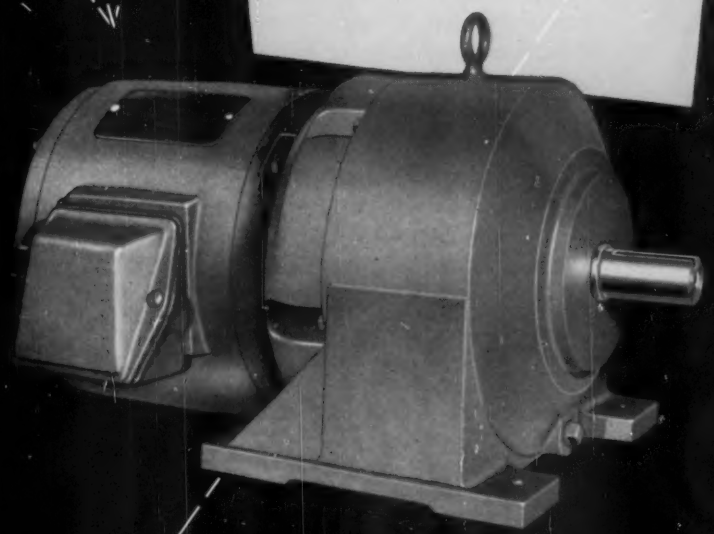
**A trade name of Thiokol Chemical Corporation.*

Texas Gulf Sulphur Co.

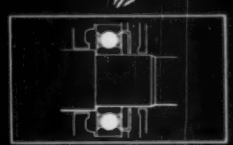
75 East 45th Street, New York 17, N. Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- Newgulf, Texas
- Moss Bluff, Texas
- Spindletop, Texas
- Worland, Wyoming

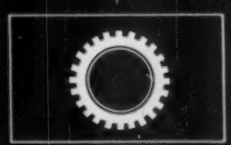
Don't overlook what you can't see



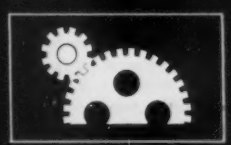
You can't always see what makes a gearmotor outstanding. It's the attention paid to small design details that makes the difference. Here are a few of the details that make the new Reliance Gearmotor stand above the rest.



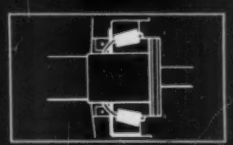
FOOLPROOF METERMATIC motor bearing lubrication and oil bath gear lubrication for long-life protection against wear.



INDUCTION HARDENING of the tough alloy steel gears gives a perfect combination of wear resistance and strength.



SIMPLIFIED GEARING with few moving parts reduces friction losses and lessens chances of breakdown.



THRUST BEARINGS handle heavy overhung loads safely by placing strain on the frame instead of the shafts.

Find out the complete story for yourself— contact your Reliance representative or write for Bulletin E-2408.

E-1509

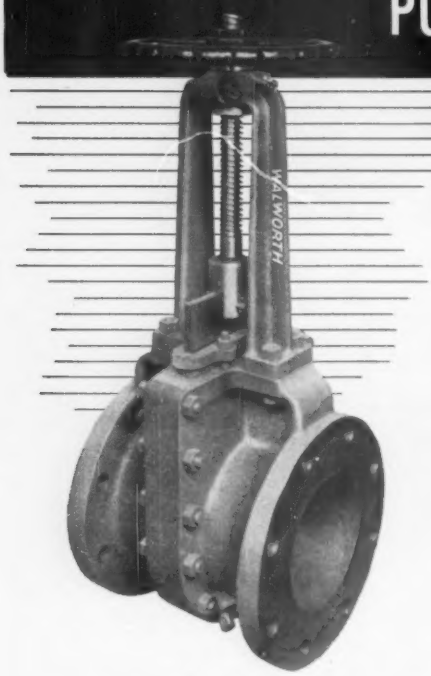
REDUCE SPEED

RELIANCE ELECTRIC AND ENGINEERING CO.

CLEVELAND 10, OHIO • OFFICES IN PRINCIPAL CITIES

Canadian Division: Welland, Ontario

Complete lines of **WALWORTH** Valves for PULP and PAPER MILL SERVICE



Featuring the No. 757F Pulp Stock Valve!

Here's the valve that was developed especially for clogproof operation on stock lines. There are no recesses where pulp fibers can accumulate. Circular ports permit full flow. The sharp, flame-hardened edge of the semicircular stainless steel gate shears through the pulp stock to a tight, leakproof shutoff.

The No. 757F can be supplied in sizes 4" to 24" inclusive – in All Bronze, Iron Body with Bronze Trim, Iron Body with Stainless Steel Trim, All Stainless Steel construction. Complete information is available from your nearby Walworth Distributor – or – write Walworth direct for a free copy of the booklet, "Walworth Valves for Pulp and Paper Mill Service".

and including these valves for "across-the-board" use!

WALWORTH BRONZE VALVES. These standardized lines of bronze valves provide an unsurpassed system of interchangeability of parts. Drastically reduces inventory problems.

WALWORTH PRESSURE-SEAL CAST STEEL VALVES. Ideal for high-pressure, high-temperature steam and boiler feed service. Internal line pressure is utilized to maintain a tight, leakproof body-to-bonnet connection, reducing bulk and weight of valve.

WALWORTH No. 716 NI-RESIST SADDLE STYLE GATE VALVE. The OS&Y design prevents the fluid in the line from coming in contact with the stem threads. This design meets the requirement for a line of valves in small sizes for pulp and paper mill service.

WALWORTH No. 725FS OS&Y, FLANGED, SPECIAL ALLOY WEDGE GATE VALVES. Designed especially to retard caustic corrosion in the pulp and paper industry.

WALWORTH 928FS SPECIAL ALLOY SWING CHECK VALVES. Designed for the severe corrosive services encountered in the pulp and paper industry.

WALWORTH LUBRICATED PLUG VALVES. Easy turning — quick operating. Lubricant can be renewed while the valve is in service. Lubricant completely surrounds the plug ports assuring a tight seal against leaks.

WALWORTH also offers Plastic Valves and Fittings, and Walseal® Valves and Fittings. Walseal products have factory-inserted rings of silver-brazing alloy in threadless ports.

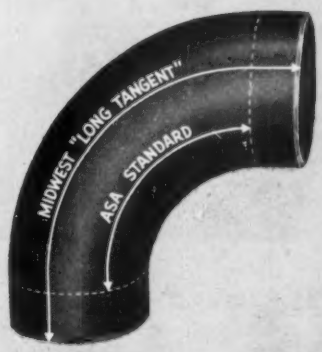
WALWORTH

Pulp and Paper Mill Division
60 East 42nd Street, New York 17, N. Y.

Walworth Company of Canada, Ltd., Toronto

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

THESE MIDWEST "LONG TANGENT" ELBOWS SAVED $4121 IN PIPE



MIDWEST "LONG TANGENT" ELBOWS COST NO MORE THAN OTHER ELBOWS

Here are 1227 Midwest "Long Tangent" Elbows (12″, 14″ and 16″ standard weight) ready for shipment to a chemical plant. Each Midwest "Long Tangent" Elbow has a straight section on each end equal in length to ¼ the nominal pipe size. Thus a 12″ elbow saves 6″ of 12″ pipe while a 16″ elbow saves 8″ of 16″ pipe. It doesn't take long to save a lot of pipe and a lot of money . . . in this instance $4121.

But saving pipe is not the only advantage of Midwest "Long Tangent" Elbows. They often eliminate short nipples and their extra welds . . . save time and money in lining up and clamping pipe and fittings . . . slip-on flanges are more easily applied. For all the facts, write for Catalog 54.

MIDWEST PIPING COMPANY, INC.
Main Office: 1450 South Second Street, St. Louis 4, Mo.
Plants: St. Louis, Clifton, N. J., and Los Angeles

Sales Offices:
New York 7—50 Church St. • Chicago 3—79 West Monroe St. • Cleveland 14—616 St. Clair Ave. • Los Angeles 33—520 Anderson St. • Houston 2—1213 Capitol Ave. • Tulsa 3—224 Wright Bldg. • Miami 34—2103 Le Jeune Rd. • Boston 27—426 First St. • San Francisco 11—420 Market St. • Oneida, N. Y.
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MIDWEST WELDING FITTINGS

MIDWEST WELDING FITTINGS Improve Piping Design and Reduce Costs

7055

7 years' trouble-free service on HCL acid with this Crane diaphragm valve

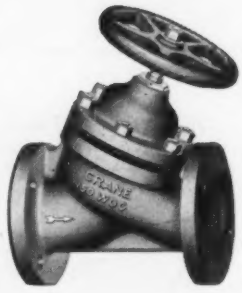
How do Crane diaphragm valves perform on acid services?

This major container manufacturer has impressive proof. Seven years ago, the Crane 4-inch No. 1615-RN rubber-lined diaphragm valve shown above was installed on 17 deg. Baume hydrochloric acid service. The acid is used to clean evaporators and surface condensers. *Not once has this Crane diaphragm valve failed to function—not once has it failed to hold tight.*

Previously, this plant used conventional all-metal valves. These had to be replaced regularly as an expendable material. The Crane valve has eliminated all replacement costs by providing maintenance-free performance—and from all appearances will continue to do so for years to come.

You just don't get service like this from ordinary valves. Crane valves are so expertly designed, have such quality materials and are so carefully machined and tested that cost-free records like this are the rule rather than the exception with Crane users.

Get the facts on Crane diaphragm valves from your local Crane Representative, or write to address below.

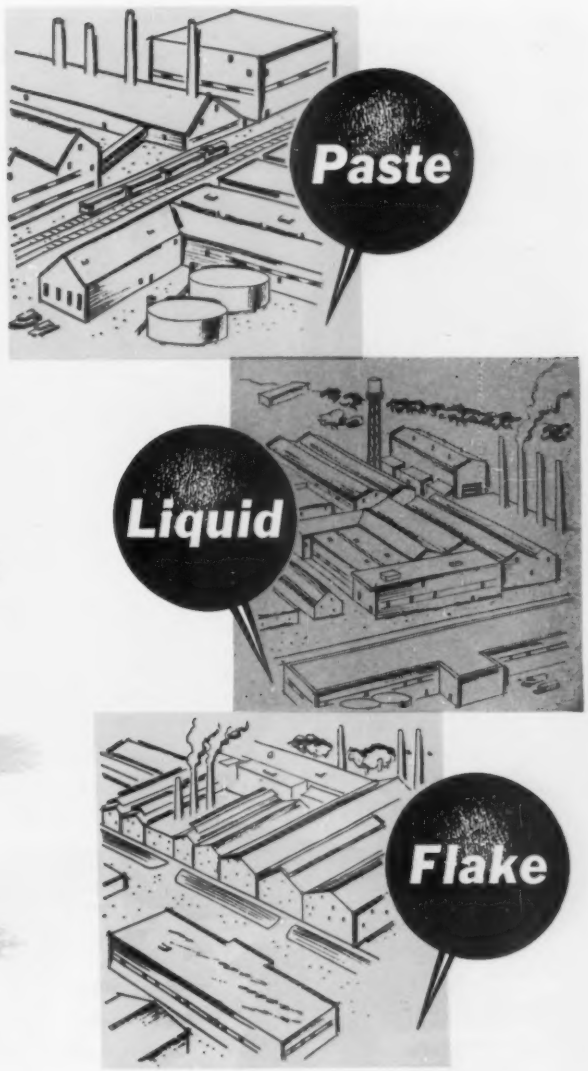


CRANE VALVES & FITTINGS

PIPE • KITCHENS • PLUMBING • HEATING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

NOPCO HAS THE DEFOAMER THAT WILL GIVE BEST RESULTS FOR EACH MILL



Nopco, the first to make a chemical defoamer for the pulp and paper industries, has an unrivalled wealth of first-hand experience, and the widest range of defoamers... paste, liquid, and flake. One thing we know for sure—there's no such thing as a defoamer that works equally well in *every* mill. Local conditions vary too much.

That's why we prefer to analyze a sample of white water from your mill. We test it with every potentially effective defoamer—including if you like, the one you are now using. When we have finished our exhaustive tests, we are able to determine scientifically and impartially, which defoamer will give your mill the even fiber distribution, fewer breaks, higher machine speeds, and improved sheet formation that you should have.

What you want is the absolute minimum of foam in your operation. If you haven't given Nopco a chance to "prescribe", you can't be sure you have that absolute minimum. Why not consult Nopco Chemical Company, today?

NOPCO

PLANTS: Harrison, N. J.
Cedartown, Ga. • Richmond, Calif.
London, Canada

look...

it's

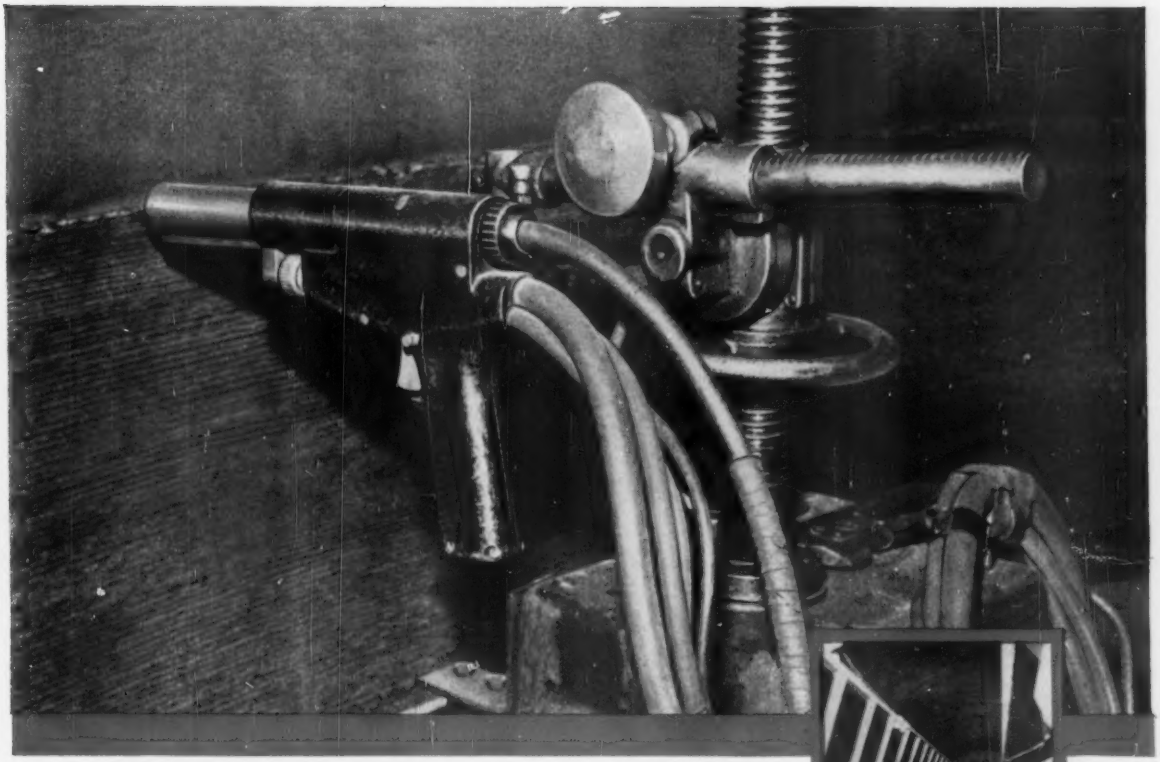
TITANOX*

It's in the cards! TITANOX white pigment, that is, helping to impart white brilliance and sharp contrast. Easily mixed, rapidly dispersed, TITANOX titanium dioxide pigments are aces-high for whitening, brightening and opacifying every kind of paper stock.

In paper—as in paints, plastics, ceramics and rubber—TITANOX is your No. 1 choice in white pigments. Titanium Pigment Corporation (subsidiary of National Lead Company), 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1; Vancouver 2.

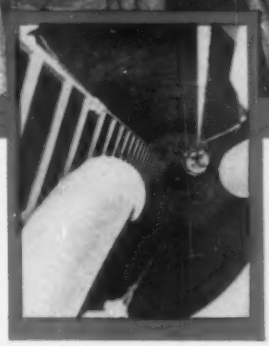
4207

*TITANOX is a registered trademark for titanium pigments sold by Titanium Pigment Corporation.



Stainless weld overlay is applied automatically, by the inert gas consumable electrode process, to the vertical wall of a carbon steel kraft digester.

HOW STAINLESS OVERLAY KEEPS KRAFT DIGESTER IN SERVICE AT ⅓ THE COST OF REPLACEMENT



Interior of overlayed vessel. Six thousand pounds of Crucible Rezistal stainless, 1/16" overlay welding wire was used to cover 1,400 square feet of area. The cost: One-third that of vessel replacement.

This is one of a number of carbon steel kraft digesters which have been successfully overlayed with Crucible stainless steel. At one-third the cost of a new unit.

In digesters, where corrosion – accelerated by splashing and spraying of hot liquors and gases – causes dangerous thinning, stainless weld metal can be applied directly to the carbon steel. It's an accepted process that has proved effective over years of mill operations. And it has the added advantage that it may be applied locally where needed to extend the life of the digester.

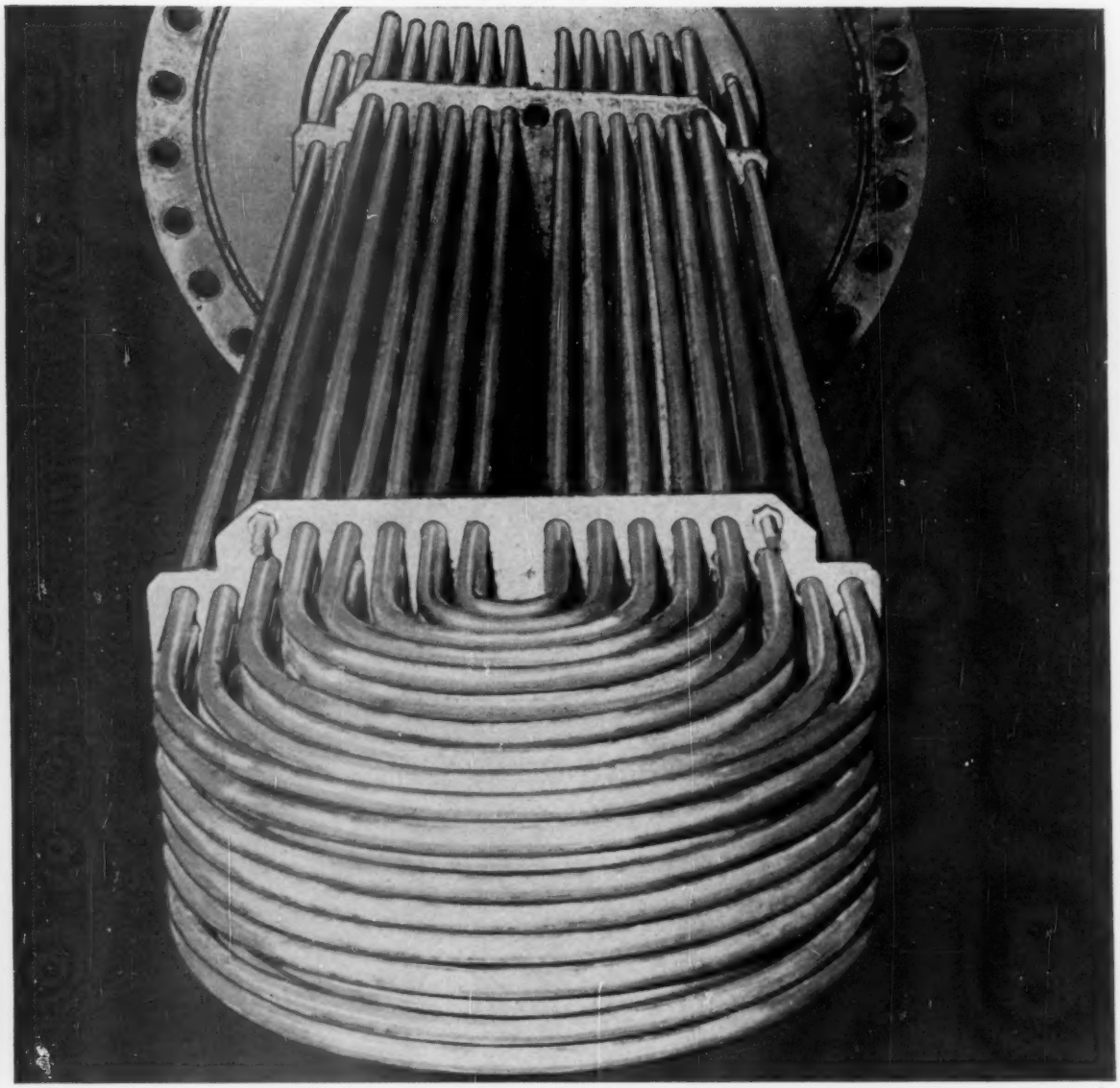
Not only in digesters, but throughout the paper mill, stainless equipment prevents rust, corrosion, and erosion. It adds high strength and rigidity. And stainless offers excellent resistance to wear and cavitation, along with its resistance to the alkalies and many of the acids and their salts.

If you'd like further details concerning this, or other stainless applications, please write *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor — Railway & Power Engineering Corp., Ltd.



Carpenter Stainless No. 20Cb Tubing withstands Tortuous Fabrication and Service

Note the tortuous hairpin bends in this tube bundle used in a large oil refinery to handle concentrated H_2SO_4 at temperatures from 175-194°F, and pressures from 300-400 psi. Whenever and wherever *you* design or use equipment that handles severe corrodents, check the service-proved cost-saving results you can expect with Carpenter Stainless No. 20 and No. 20Cb. Ask your Carpenter Distributor about these super stainless alloys available in tubing, pipe, sheet, plate, bars, wire, strip and billets.

MEMBER

The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

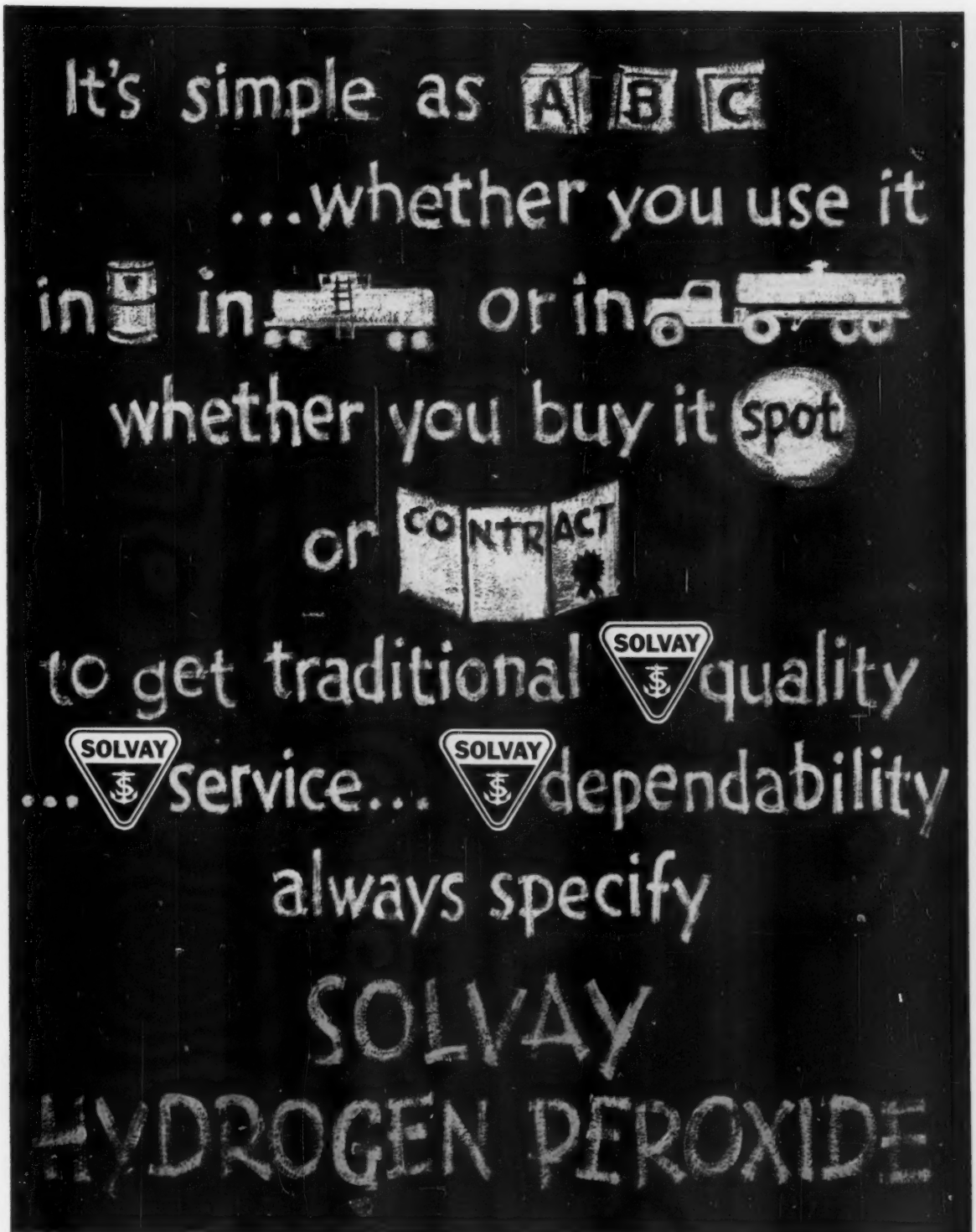
Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

Carpenter

pure iron corrosion resistance

Stainless Tubing & Pipe

Carpenter No. 20 bars, strip, wire and billets are available also from The Carpenter Steel Company, Reading, Pa.



Aluminum Chloride • Vinyl Chloride • Caustic Soda
Potassium Carbonate • Calcium Chloride • Chlorine
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Sodium Bicarbonate • Methyl Chloride • Soda Ash
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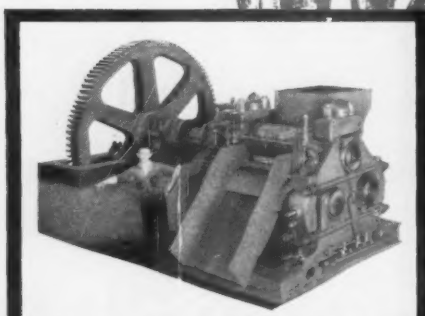
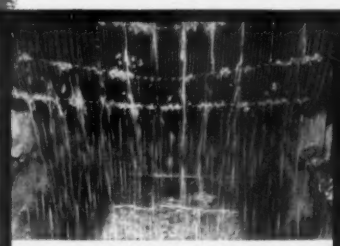
solve your burning question!

MAKE PROFITABLE FUEL FROM WET BARK

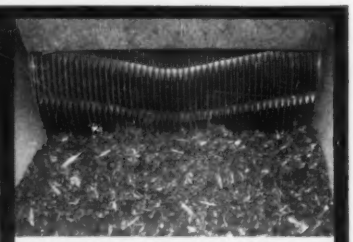
WITH A FULTON ROLL PRESS

The photographs show how a Fulton Roll Press de-waters and reduces mill refuse into efficient fuel . . . ALL IN ONE CONTINUOUS OPERATION.





Water is squeezed from bark containing 70% moisture and averaging only 5,582 BTUs per pound.



Dry fuel containing only 47% moisture and averaging 7,390 BTUs . . . ready for economical burning.

FEED WASTE INTO THE HOPPER
WATCH DRY FUEL POUR OUT

The Fulton Roll Press will rid your plant of soggy bark, knots, screenings and other fibrous material. And this process costs far less than inefficient "batch" methods.

It took FULTON . . . with over 104 years experience in dehydrating fibrous material for the sugar industry . . . to develop the remarkable Roll Press.

MAKE US PROVE IT ON YOUR MATERIAL . . .

Mail coupon now for full details and FREE TEST RUN of materials you want to process.

FULTON IRON WORKS COMPANY
Dept. PP-12 • 4235 Duncan Ave. • St. Louis 10, Mo.

Please send full details of FULTON ROLL PRESS.
We are interested in FREE TEST RUN of .....

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FIRM .....
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CITY ..... ZONE ..... STATE .....

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HYDRAULIC MACHINERY CO., LTD.
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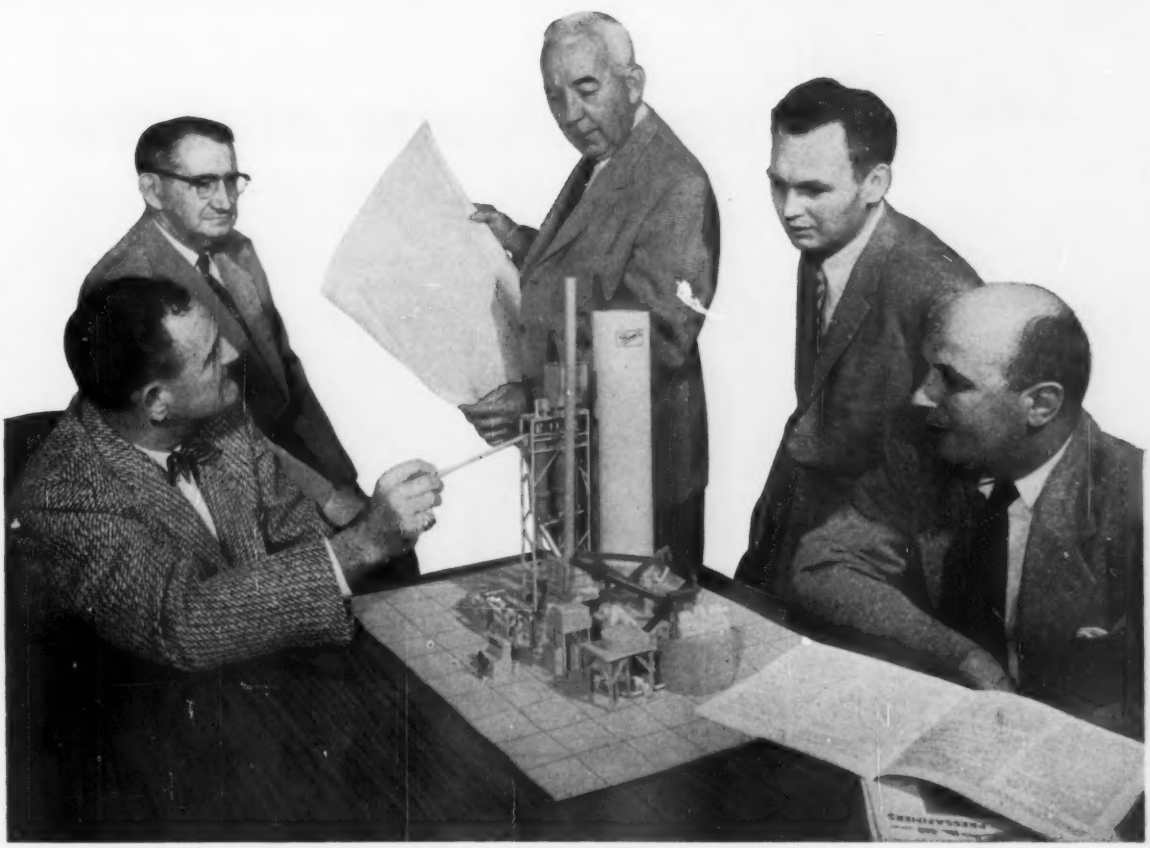
Montreal, Quebec
(Canadian Licensee)

From Bauer come such achievements as a revolutionary system for making groundwood type pulp from chips—a process which employs other Bauer innovations like the Pressafiner, the Bauer Double Disc Refiner, the Centri-Cleaner, and the Bauer Pressure Refiner.

M. E. Ginaven, C. K. Textor, J. C. Shouvlin, A. J. Horstman and Lee Eberhardt are just a few of the men at Bauer who contribute to the advancement of the pulp and paper industry through the development of unique ideas, machine designs, and processes.

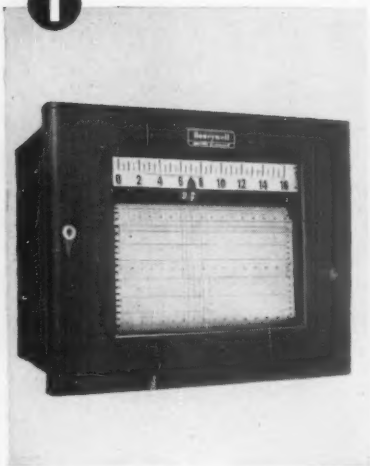
The Bauer Bros. Co.
Springfield, Ohio



Controlled by Honeywell instruments, this continuous digester system was built by the Black-Clawson Company, Pandia Inc. Division. The diagram represents an installation at Potlatch Forests Inc., Lewiston, Idaho.

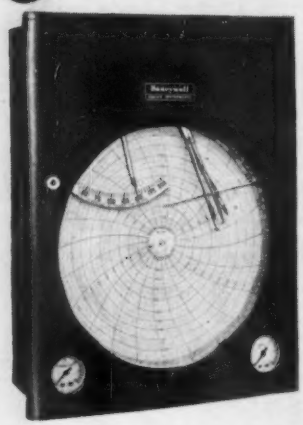
Continuous digester

1



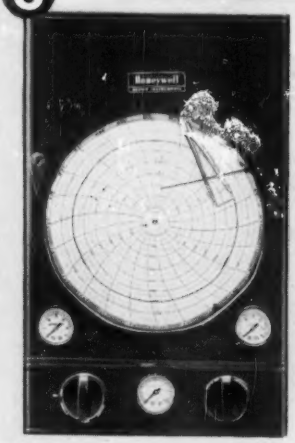
***ElectroniK** Strip Chart Recorder —records screw speeds*

2



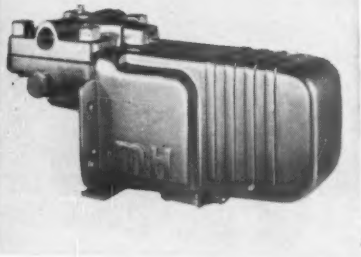
Flow Recording Controller— records and controls liquor flow

3



Pressure Recording Controller (shown with bypass)—controls steam pressure

4

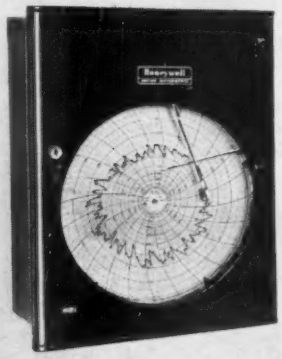


***Differential Converter**—measures steam and liquor flow and transmits to recording instruments*

5

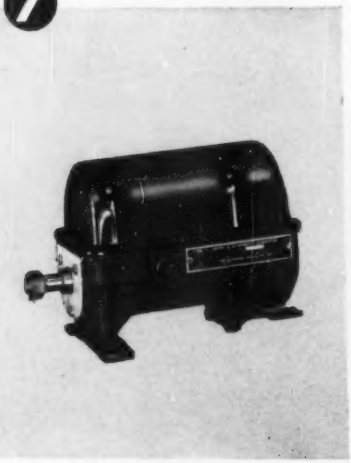
Series 800 Pneumatic Control Valve—controls steam and liquor flows

6

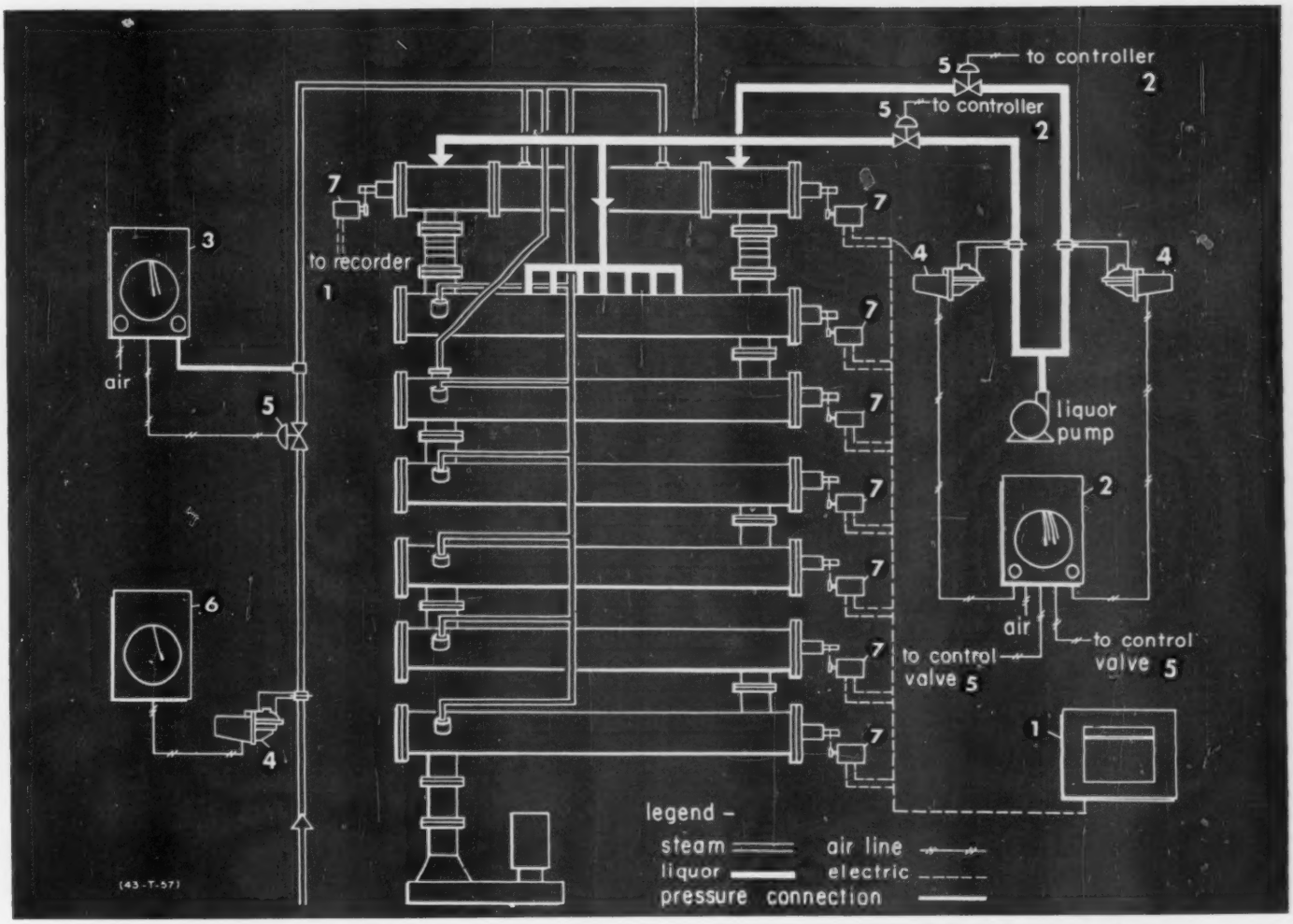


Flow Recording Integrator— records and integrates steam flow

7



Tachometer Generator—transmits screw speeds to recording instrument



with Honeywell controls...

makes better pulp in less time

USE of the rapid continuous digester is a definite trend in modern pulping practice. In the Pandia Continuous Digester®, made by the Black-Clawson Co., Honeywell instrumentation provides the close control of heat and power from which the basic advantages of continuous pulping derive.

Operating at relatively high temperatures, the Pandia Continuous Digester produces high-quality pulp from bagasse in only about 10 minutes . . . bleachable kraft pulp in 35 minutes, compared with the usual three-hour cycle for the batch operation . . . bleachable semi-chemical hardwood pulp in 40 to 60 minutes, compared with the six-to-eight-hour cycle in a batch operation.

Honeywell controls keep steam and power requirements uniform, reducing peak load demands in the steam and power plants, and allowing operation at high load factors. These instruments also maintain maximum uniformity of pulp quality by precisely regulating the flow of steam and chemicals for thorough, continuous mixing with the fibrous raw materials. Steam requirements are held low and liquor demand is maintained at a uniform level. As applied in the Pandia Continuous Digester, Honeywell controls greatly increase productivity per man hour and keep production costs down.

This is another example of how Honeywell instrumentation helps bring pulp and paper processing methods up to date. If your own plant is due for modernization, have Honeywell specialists assist in the planning. When you order process equipment, specify Honeywell controls to translate your plans into efficient, profitable operation —and for service that extends far beyond installation. Call your nearby Honeywell sales engineer. He's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.—in Canada, Toronto 17, Ontario.

MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS

First in Controls

Is she erasing your reputation?

A few more erasures and the girl—and her boss—will be convinced that the letterhead is no good. If it has your watermark, another customer is lost.

Mill operators find that Hercules starches used in tub sizing quality papers add great resistance to erasure. Ink feathering is diminished, too. Hercules starches provide a thin, transparent, almost colorless film. Your paper will have the pleasant feel and rattle so important to the end-user.

Technically, Hercules starches are important to you because of their uniformly high quality, ease of application and freedom from variation. You can be certain of the same size mixture over an extended period of time if you use Hercules starches. In addition, tensile strength, fold test and bursting strength are improved markedly.

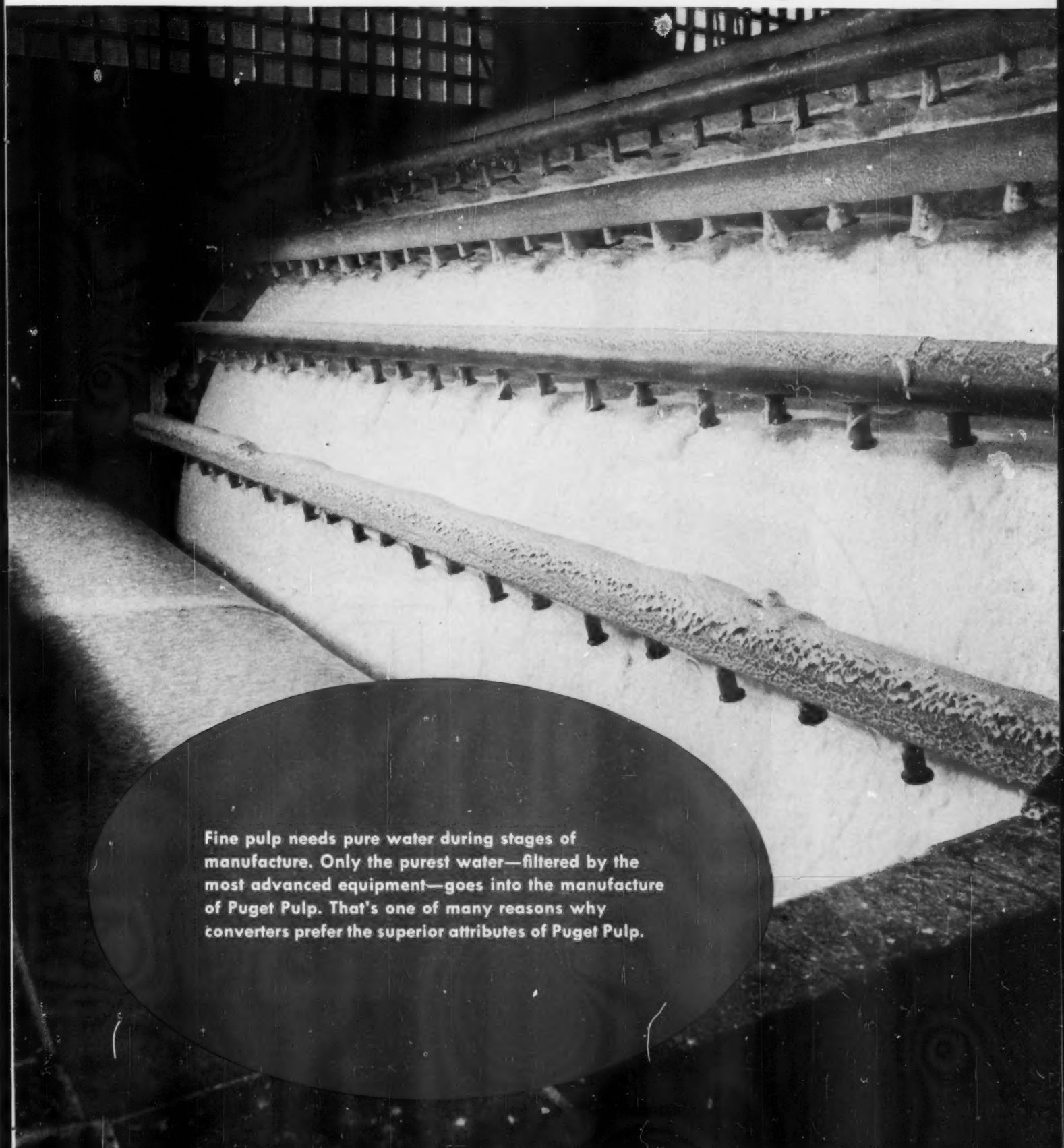
Ask the man from Corn Products, he can help with product information and engineering assistance. Whatever your paper-making problem, he will be able to supply you with the technical assistance you require.

Hercules
CORN STARCH

1906 • **50th ANNIVERSARY** • 1956
CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York 4, N. Y.

Corn Products makes these famous brands of starches and gums for the paper industry:
HERCULES · GLOBE · EAGLE · FOXHEAD · AMIJEL · CORAGUM · TEN-O-FILM · CLARO STARCHES
EXCELLO AND GLOBE DEXTRINES · LAM-O-DEX GUMS

Only the Best goes into Puget Pulp

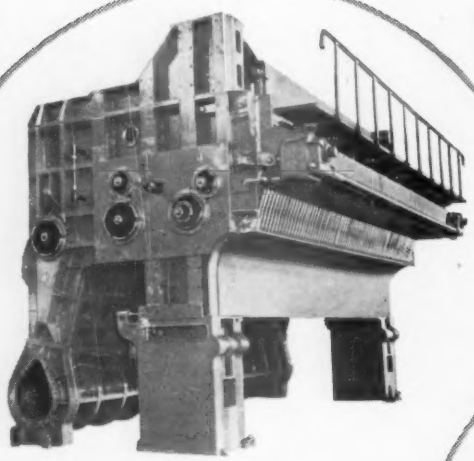


Fine pulp needs pure water during stages of manufacture. Only the purest water—filtered by the most advanced equipment—goes into the manufacture of Puget Pulp. That's one of many reasons why converters prefer the superior attributes of Puget Pulp.

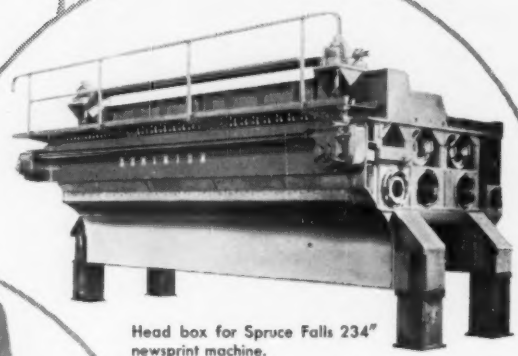
PUGET SOUND
PULP AND TIMBER CO.
BELLINGHAM, WASHINGTON

"DOMINION"

contributes to progressive improvements in Canadian paper making machinery



Dominion patented head box for Elk Falls 284" newsprint machine.



Head box for Spruce Falls 234" newsprint machine.

A head box for Howard Smith Paper Mills Crabtree Mill 96" Yankee Tissue Machine.

Three of the many new pressure type head boxes built and being built by Dominion Engineering— ensure controlled, uniform flow for paper machines regardless of stock, width or speed...

For further information, contact Dominion Engineering Company Limited, in Montreal, Toronto or Vancouver

DOMINION ENGINEERING
COMPANY LIMITED

How to CUT YOUR KNIFE COSTS as well as paper

LONG-LASTING, HAIRLINE CUTTING ACCURACY—Special high temper, close grained 866 alloy steel face.
EASY INSTALLATION—Non-distorting, shock-resisting alloy steel back. Holes accurately drilled and tapped.
CLEANER CUTTING—Accurately beveled and expertly honed to a razor edge for standard use or special requirements.
FREE AND EASY CUTTING—Micrometer ground concavity and taper on face for proper clearance . . . to prevent dragging and binding.

You can save on knife re-sharpenings and replacements with Disston 866 Paper Knives. Edges stay sharp, won't roll under or chip out.

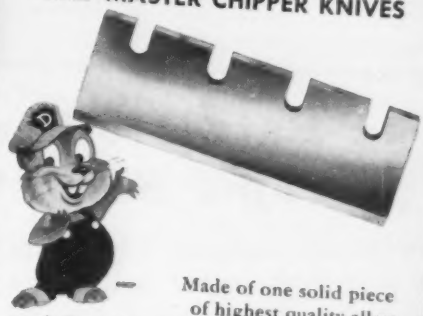
Whether the material you cut is tissue paper, cardboard, kraft, machine finish or coated papers—Disston 866 Paper Knives stay sharp. They need less frequent sharpening, few replacements.

You can be sure, too, that Disston 866 Paper Knives will arrive in perfect condition. Each is oiled, wrapped in moisture-resistant paper and bolted to a special board with cutting edge fully protected.

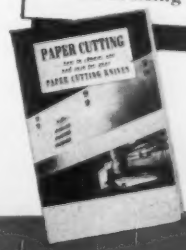
Your nearby Disston Distributor or Harris-Seybold Branch provides prompt service. Ask today about Disston 866 Paper Knives.

See your distributor, too, for

DISSTON CHIP-MASTER CHIPPER KNIVES



Made of one solid piece of highest quality alloy steel. Ground super-sharp at the knife edge; super-smooth on the knife face. Specially heat-treated and tempered-hard and tough at the cutting edge; softer at slots to absorb shocks. Long edge life; fast re-sharpening; low direct knife cost. Uniform chips; minimum bruising and sawdust.



Get this latest full-of-facts booklet on how to choose, use and care for paper cutting knives. 32 pages. Fully illustrated.

Henry DISSTON DIVISION
H. K. PORTER COMPANY, INC.
1291 Tacony, Philadelphia 35, Pa.

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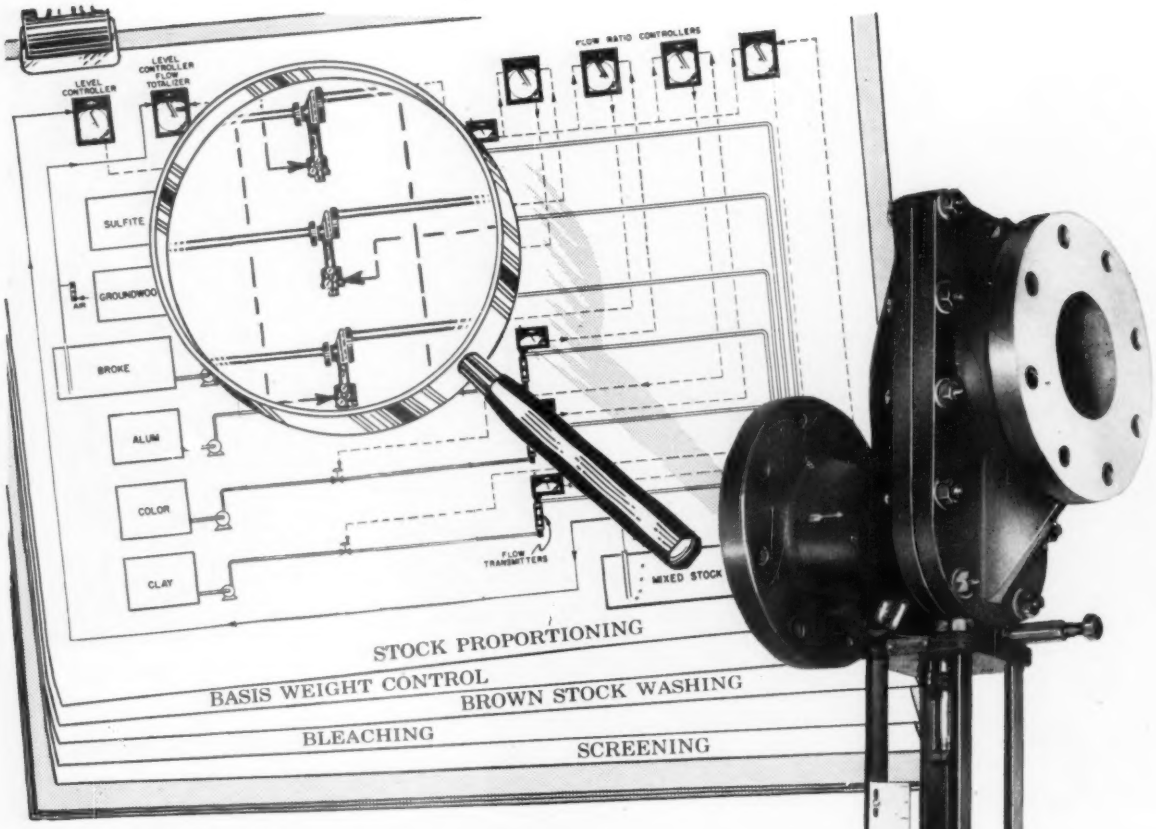

F & P Ratogate Non-Plugging Paper Stock Valve

"CONTROLLED TURBULENCE" AND DIAMOND-SHAPED PORT GIVE WIDE RANGE STOCK FLOW CONTROL WITHOUT PLUGGING

The Z-shaped body of the F&P Ratogate valve provides "controlled turbulence" to prevent paper stock from de-watering and plugging as flow rate increases or decreases. Even at low flow rates the agitation continues to provide an effective washing action inside the valve body.

The port becomes diamond-shaped at the critical lower portion of valve travel, affording the minimum perimeter for the area of opening. Easy passage of stock particles is assured over a wide flow range.

ONLY THE RATOGATE STOCK VALVE COMBINES THESE FEATURES:

- ★ "Controlled Turbulence" washing action designed into Z-shaped body

  Rectangular port becomes diamond-shaped at low flow ranges for minimum perimeter-area ratio
- ★ Pneumatic or electric operation
- ★ Proven performance in hundreds of operating pulp and paper mill installations
- ★ Designed by a paper engineer for the paper industry

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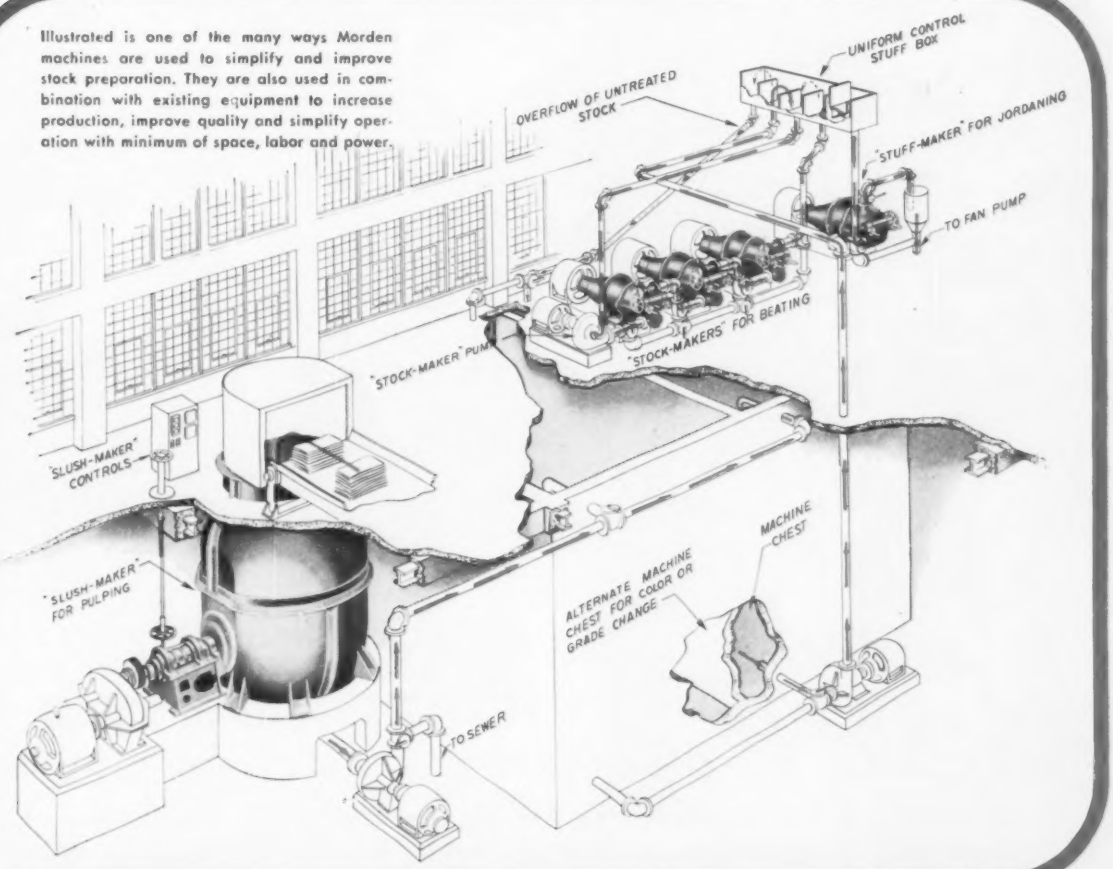
TORONTO 15, ONTARIO

LA 1116

Illustrated is one of the many ways Morden machines are used to simplify and improve stock preparation. They are also used in combination with existing equipment to increase production, improve quality and simplify operation with minimum of space, labor and power.



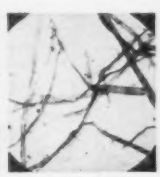
The MORDEN System of Stock Preparation

Morden offers three basic machines—each proven to excel in one of the three fundamentals of stock preparation—pulping, beating and jordaning. Each machine is precisely engineered, and permits full range of treatment on a continuous production line operation.

Morden's years of experience with hundreds of installations throughout the world can provide the "know-how" to assist mills in adapting existing systems or developing new systems of stock preparation to best serve individual requirements.

Ask Morden for more detailed information or assistance and how this equipment can be used advantageously in *your* mill.

PULPING
Separating one fiber from the other in preparation for treatment.



BEATING
Brushing or fibrillating, with emphasis on retention of fiber length for strength.

JORDANING
Shortening or cutting for formation and final control (if required).

To Mordenize...Use

MORDEN SLUSH-MAKER FOR PULPING
MORDEN STOCK-MAKER FOR BEATING
MORDEN STUFF-MAKER FOR JORDANING

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY
3420 S. W. MACADAM
PORTLAND OREGON

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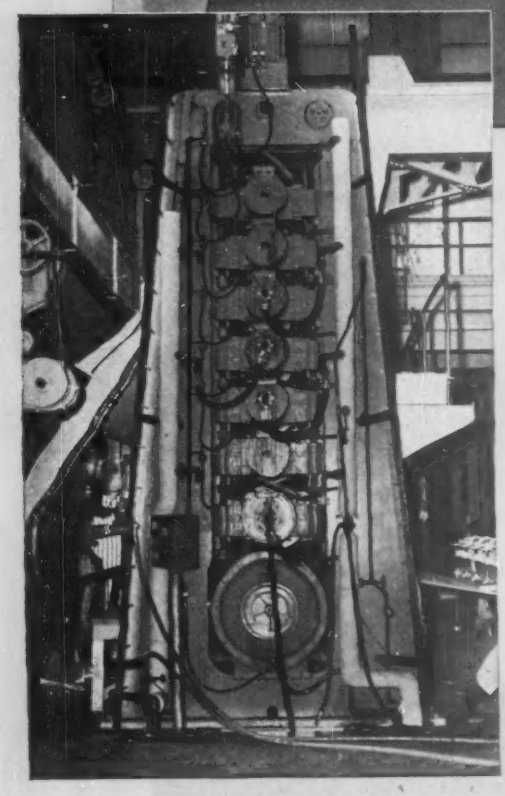
BRANDON SALES, INC., Greenville, S. C.

Other Representatives in Most Paper-making Countries

At Southland, it's Puseyjones again

This new, high-speed newsprint machine is the second Puseyjones machine to be installed at Southland Paper Mills, Inc., Lufkin, Texas. In line with the Puseyjones tradition, it incorporates the latest developments in the papermaking art. For example, the vacuum pick-up of this newest Puseyjones machine makes possible a maximum operating speed of 2,000 feet per minute.

Whether your plans include a completely new machine, the rebuilding of an existing machine, or the replacement of individual equipment, it always pays to talk it over with Puseyjones. Write or call us now.



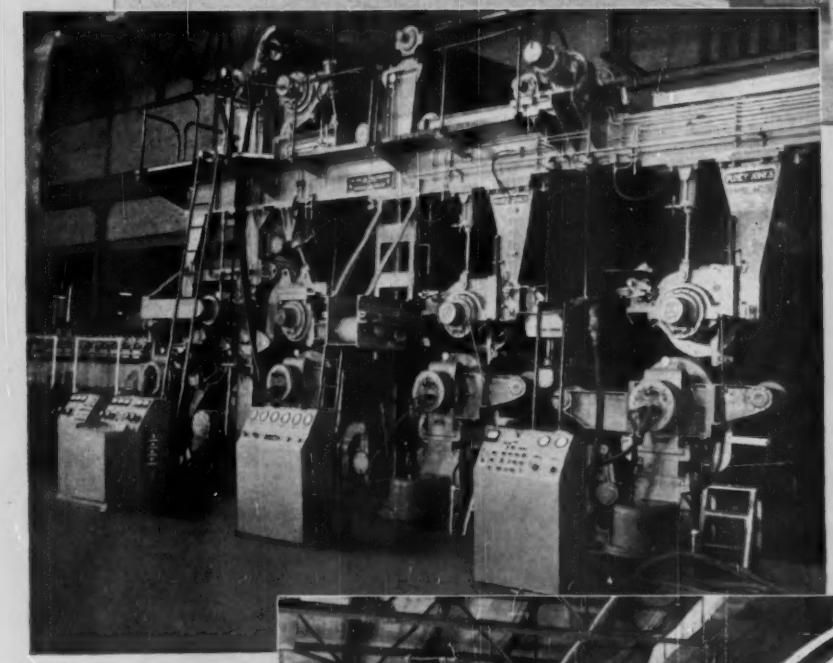
Top: Machine from Wet End

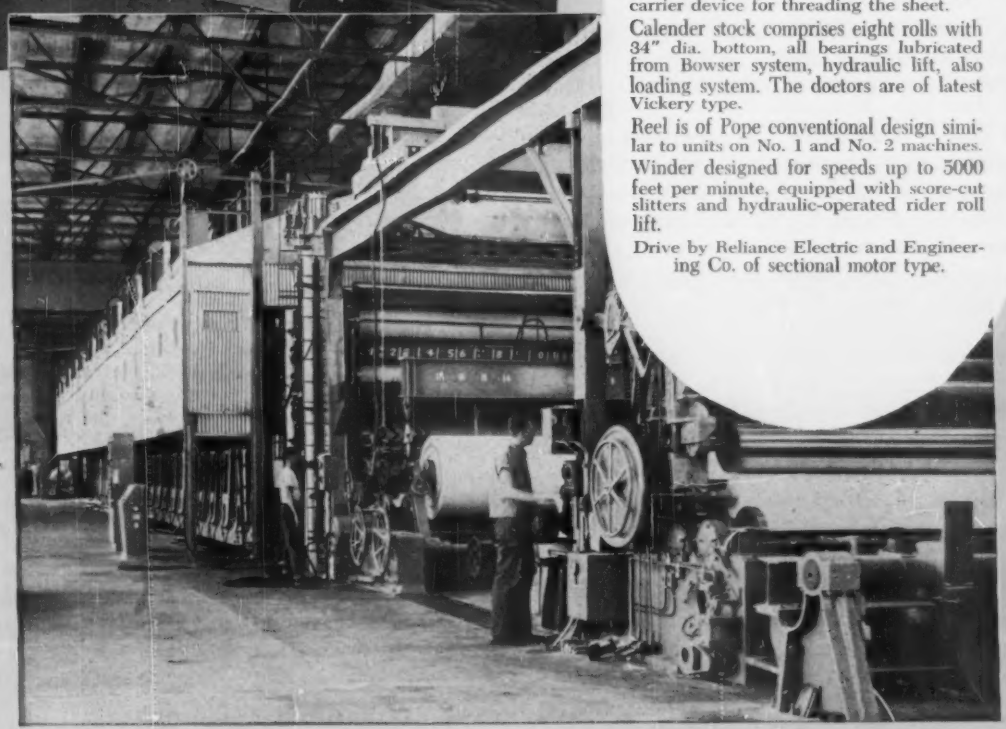
Bottom: Calender Stack

THE PUSEY AND JONES CORPORATION
Established 1848 : : Builders of Paper-Making Machinery

Fabricators and Welders of all classes of
Steel and Alloy Products
Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY





Top: Dry Part

Center: Vacuum Pick-up and Press Part

Bottom: Machine from Winder End

SPOTLIGHTING THE 213½" PUSEYJONES FOURDRINIER MACHINE AT SOUTHLAND

Designed for top speed of 2000 feet per minute, and completely equipped with roller bearings.

Air pressure type head box and slice with cross flow stock distributor.

Fourdrinier part suitable for wire 213½" wide, 116'-0" long, equipped with breast roll 28" dia., table rolls 12½" dia., ten suction boxes, suction couch roll 44" dia., return drive couch roll 34" dia. Wire changing is accomplished with a new design of Rapi-drape device, including hydraulic units for raising and lowering the breast roll and several inside return wire rolls. All framework is protected by stainless steel covering. Stainless steel save-alls extend from breast roll to suction couch roll. Forming board located between breast roll and first table roll with complete set of flat top deflectors and angle type deflectors between table rolls.

Press part includes five suction rolls – 30" dia. pick-up, 38" dia. transfer, 2–38" dia. main presses and 30" dia. wringer rolls, all rubber-covered. The transfer press is equipped with 30" dia. rubber-covered upper roll, and the two main presses with 32" dia. granite upper rolls. The first main press is arranged with a self-unloading doctor and broke conveyor. Hydraulic loading and handling for pick-up, wringer, transfer and main press units.

Dry part comprises 53 – 60" dia. paper dryers, one 60" dia. sweat dryer and eight 60" dia. felt dryers, divided into two main sections with four felts. High speed enclosed gearing, latest type steam joints with dual revolving siphons and automatic motorized felt take-up and tension control. Bowser lubricating system for main bearings and enclosed gearing. Rope carrier device for threading the sheet.

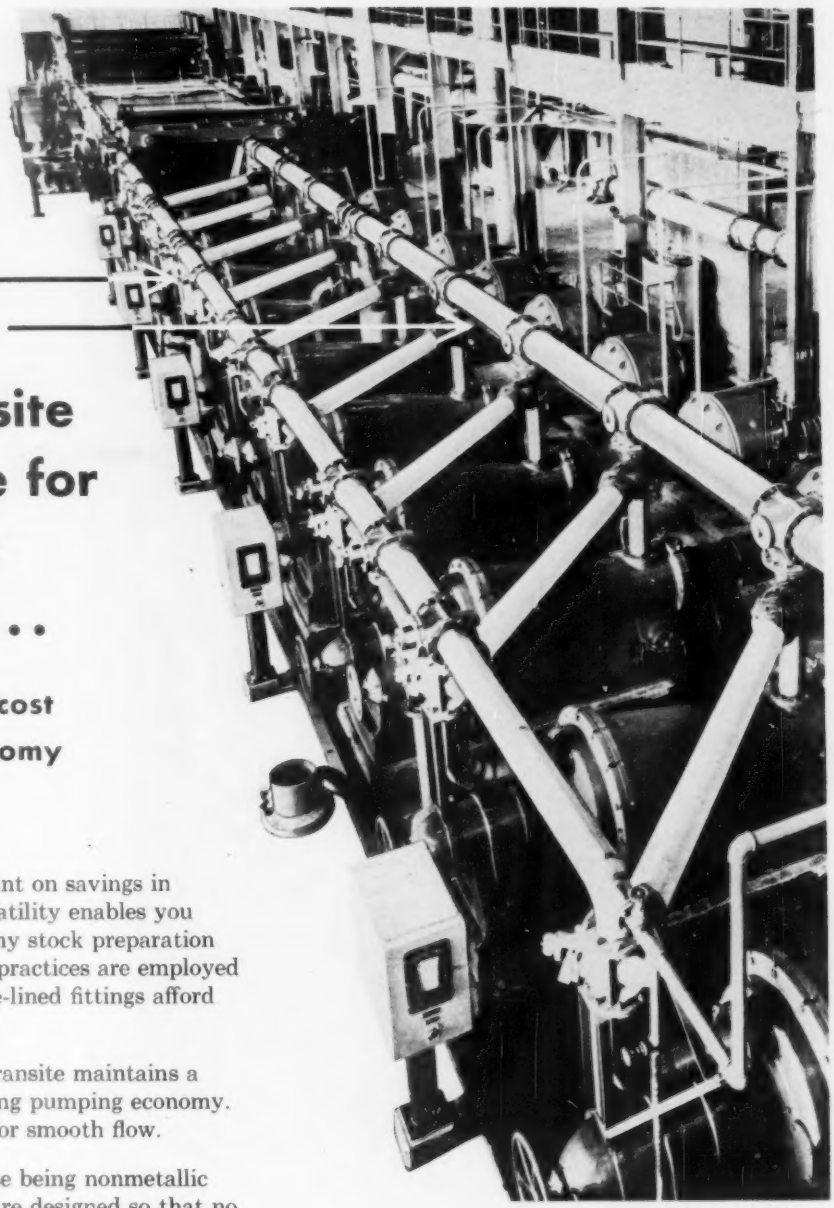
Calender stock comprises eight rolls with 34" dia. bottom, all bearings lubricated from Bowser system, hydraulic lift, also loading system. The doctors are of latest Vickery type.

Reel is of Pope conventional design similar to units on No. 1 and No. 2 machines.

Winder designed for speeds up to 5000 feet per minute, equipped with score-cut slitters and hydraulic-operated rider roll lift.

Drive by Reliance Electric and Engineering Co. of sectional motor type.

For overhead stock and process lines...



Transite stock preparation system in a West Coast Kraft mill

Specify Transite Pressure Pipe for these 3 basic advantages...

1. **Low installed cost**
2. **Pumping economy**
3. **Clean lines**

1. With Transite® you can count on savings in installed costs. Transite's versatility enables you to meet the requirements of any stock preparation system. Standard installation practices are employed and a wide variety of Transite-lined fittings afford complete flexibility of design.

2. Pumping costs are low. Transite maintains a smooth interior to assure lasting pumping economy. The joints, too, are designed for smooth flow.

3. Keeps stock clean. Transite being nonmetallic will not rust. The joints also are designed so that no metal comes in contact with stock or solution. Thus water and process liquids can't pick up rust, impurities or unwanted color. For Transite (durable asbestos-cement) resists sliming and bacterial growth as well as corrosion. This cleanliness, characteristic of Transite, gives you an added advantage: minimum maintenance and cleaning costs.

Let us send you a copy of the new installation guide. Write to Johns-Manville, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

Free . . . New 48-page installation guide. On-job experience from hundreds of successful Transite installations to help you plan and erect the proper Transite Pressure Pipe System.

JOHNS-MANVILLE JM PRODUCTS

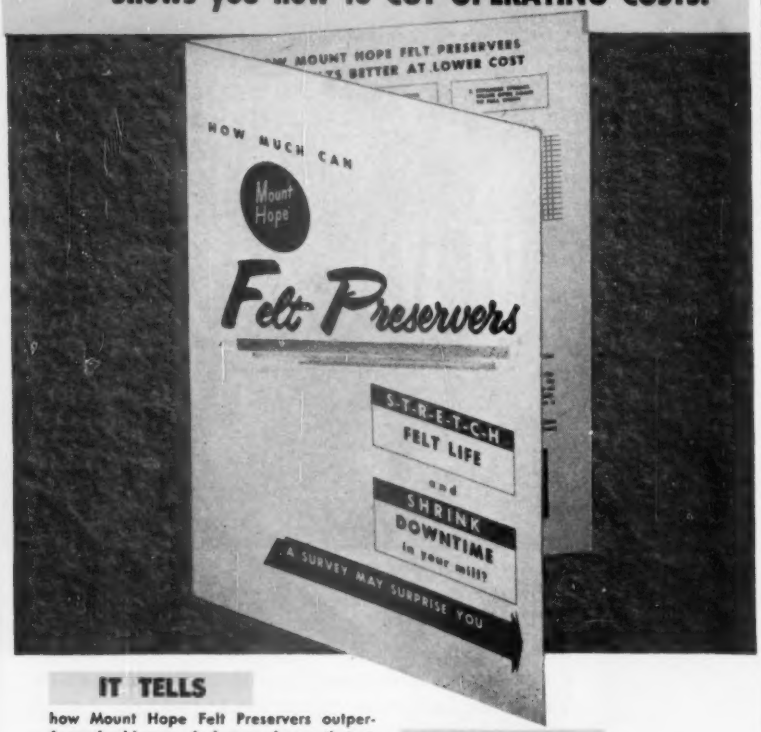
Johns-Manville TRANSITE PRESSURE PIPE

AN ASBESTOS-CEMENT PRODUCT

for LONGER WIRE LIFE
BLACK DIAMOND
WIRE and TABLE ROLLS
Fourdrinier wires carried on Black Diamond wire and table rolls have a longer useful life. Super-hard and super-smooth, Stowe-Woodward's Black Diamond rolls carry the wire smoothly, with minimum abrasion. The dense hard cover resists the imbedding of small particles which are the chief cause of damage to the wire. Its rubber surface completely eliminates the problem of roller pitting resulting from electrolysis where metal rolls are used. Moreover, Black Diamond rolls are easily doctored with a thin blade, and readily reground if necessary.
If you would like to increase wire life on your machines, ask your Stowe-Woodward Sales Engineer about Black Diamond rolls.
S-W
INC.
STOWE-WOODWARD, Inc.
Craftsmen in rubber rolls
NEENAH, WISCONSIN • NEWTON 64, MASS. • GRIFFIN, GEORGIA

NEW Bulletin

Shows you how to CUT OPERATING COSTS!



IT TELLS

how Mount Hope Felt Preservers outperformed whippers during a six-month test. It gives facts and figures to prove that felt life was doubled, narrower felts were used, felt costs were halved, downtime was slashed on the Mount Hope equipped machines.

IT SHOWS

why Mount Hope Felt Preservers clean felts better at lower cost. Sketches and descriptions explain how this gentle cleaning method keeps full-width felt running longer with its face clean and soft . . . its weave square and open.

IT COMPARES

the actual performance of traditional whippers and Mount Hope Felt Preservers on two paper-making machines in one of America's best-known mills. This is a factual report.

IT OFFERS

you a machine survey to determine how much you can *stretch* felt life and *shrink* machine downtime in your mill. Use the coupon below to get your free copy right away.

Mount Hope

FELT PRESERVERS

Clean . . . Soften . . . Widen . . . Straighten

SEND FOR YOUR FREE! BULLETIN TODAY!

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Please send me your free bulletin on Mount Hope Felt Preservers.

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COOPER ALLOY

CORPORATION BRIEFS

TEFLON AND KEL-F INCREASE RANGE OF VANTON PUMPS

The recent addition of a Kel-F liner and now a Teflon or Kel-F housing to existing materials of the Vanton pump has increased greatly their range of corrosive service.

Designed without shaft seals or stuffing boxes, the pump furnished with these new materials has excellent resistance to most corrosives at temperatures up to 300°F.

Details on request.

QUALITY STAINLESS STEEL CASTINGS REQUIRE AKH*

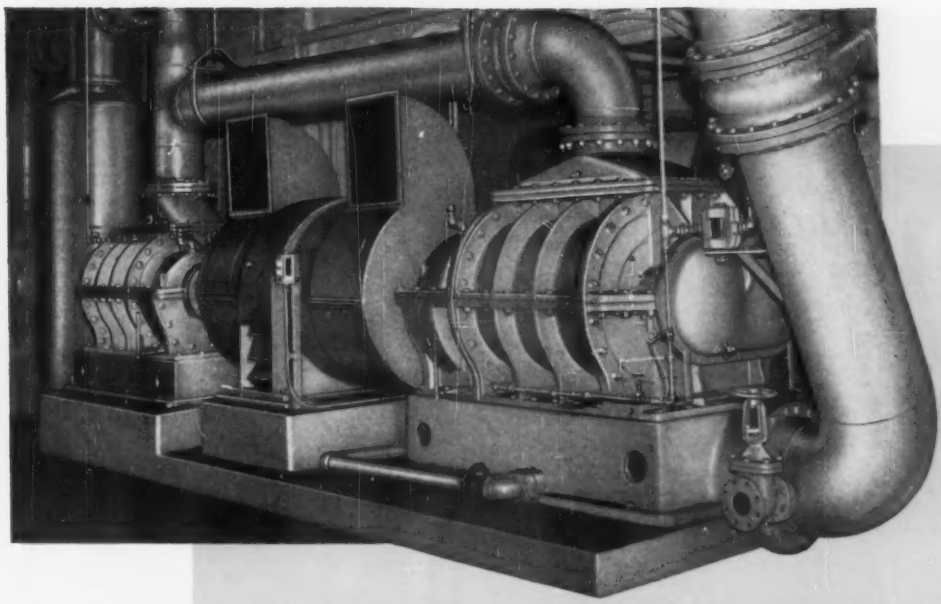
*Advanced Know-How of technique makes the difference in casting stainless steel defibering blades for a paper and pulp machinery manufacturer.

For the full story of how Cooper Alloy Shellcasting knowledge may mean higher quality castings for you, write for Bulletin AKH#5.

PLUG COCKS WITH V2B CUT GALLING

Cooper Alloy's V2B keys used in their stainless steel plug cocks have cut down the problem of galling to a very great extent. The September issue of Newscast tells how this helped a tank car manufacturer out of an expensive problem.

COOPER ALLOY
CORPORATION • HILLSIDE, N. J.



For the world's largest Yankee tissue machine...

R-C Vacuum Pumps keep production rolling at 3000 fpm

At Crown Zellerbach Corporation's St. Helens mill in Oregon, the world's largest Yankee tissue machine, with a 258-inch wire, is producing 100 to 120 tons per day at a speed of 3000 fpm.

To provide the required vacuum for the pressure roll, suction wire boxes, wringer roll, suction couch, pickup and felt conditioners, there are seven Roots-Connersville vacuum pumps to supply approximately 33,000 cfm of air at 10 to 20" Hg vacuum.

Five important operating factors have proved the performance of these R-C Positive Displacement Vacuum Pumps:

- *Reduced horsepower at higher speeds* (600 rpm and up) creates power savings up to 25% and far lower first cost of motors.
- *Single-stage or two-stage units* in capacities for all requirements.
- *Proved reliability and low maintenance* with no internal contacts or excessive wear and freedom from down-time and maintenance.
- *Minimum sealing water* from 4 to 40 gpm, unaffected by water temperature.
- *Small floor space* with less expensive foundations and lower cost per cubic foot of capacity.

R-C Positive Displacement Vacuum Pumps purchased for this installation

- Two 16 x 40 single-stage pumps
- One 14 x 35 single-stage pump
- Two 20 x 40 x 20 x 16 two-stage pumps

The 14 x 35 single-stage unit is direct-connected to a special shaft extension from one of the 16 x 40 units to make a two-stage compound pump.

For evidence of how other leading industrial users benefit from these advantages, write for Bulletin 50-B-13.

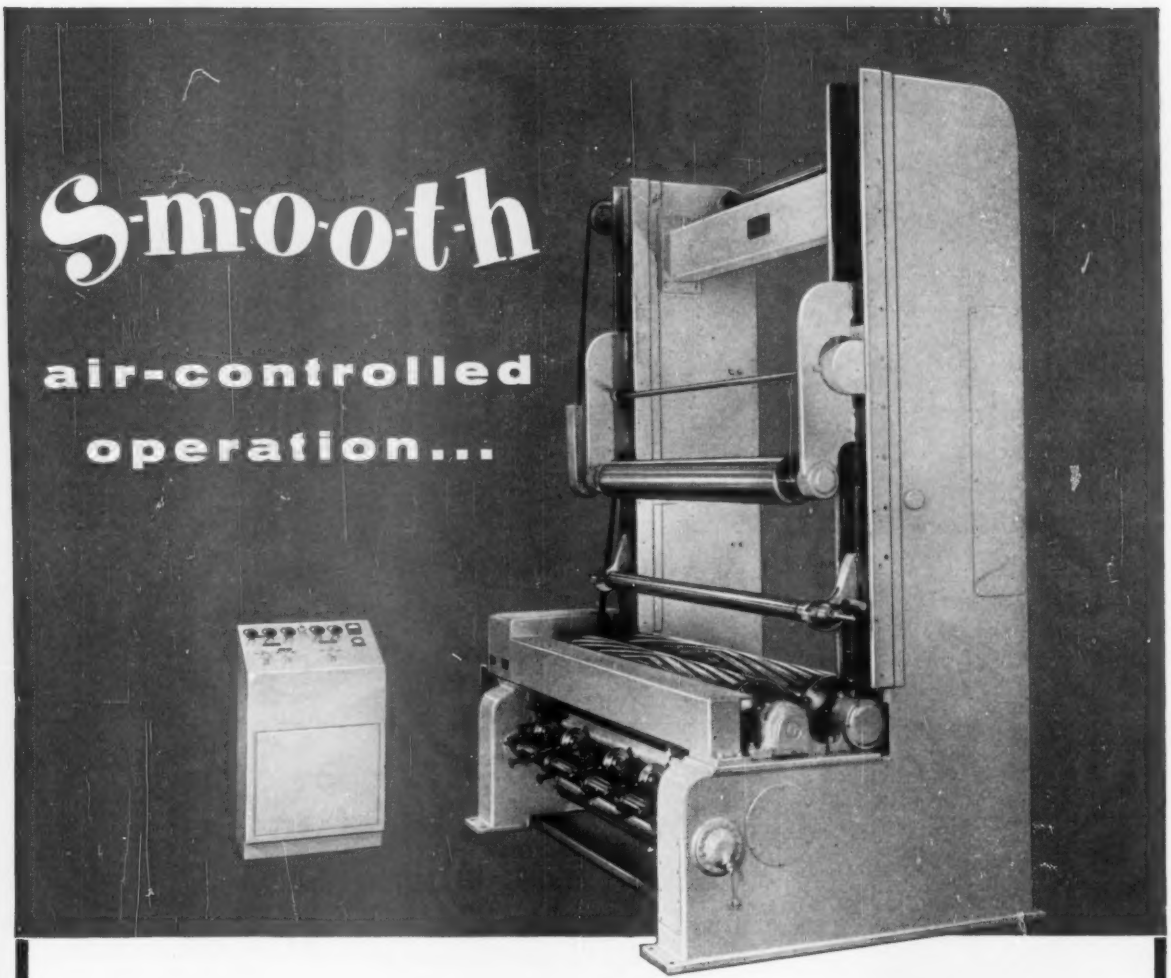
ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.

1256 Willow Ave., Connersville, Indiana. In Canada—629 Adelaide St., W., Toronto, Ont.

Smooth

air-controlled operation...



gives you perfect rolls every time!

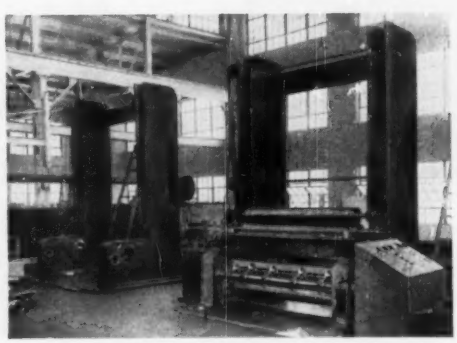
THE MANCHESTER WINDER AND SLITTER is *completely air-controlled* to insure smooth operation with uniform tightness at proper tension over the entire roll diameter.

You'll get uniformly wound straight rolls, accurately slit with clean edges to meet today's exacting printing specifications—this at lower cost with fewer complaints and better customer acceptance.

The Manchester Winder and Slitter is simple and easy to operate from a single control station.

Look into these and other features. Your inquiry will bring a prompt reply.

OTHER PRODUCTS: Adjustable Shake Motion • Pope Type Reels • Paper Machine Drives • Size Presses • Rubber-Covered Drilled Suction Press Rolls • Drilled Suction Drum Rolls • Drilled Suction Couch Rolls • Cylinder Moulds • Smoothing Presses • Complete Fourdriniers



Assembly bay of Manchester's large, modern, well equipped plant showing Winders in production.

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CUSTOM FABRICATING DATA—*Request New Brochure P-56*

This information on plant facilities and services will be of value to purchasing, procurement and engineering personnel when planning the custom fabrication of...

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for the

Pulp & Paper Industry

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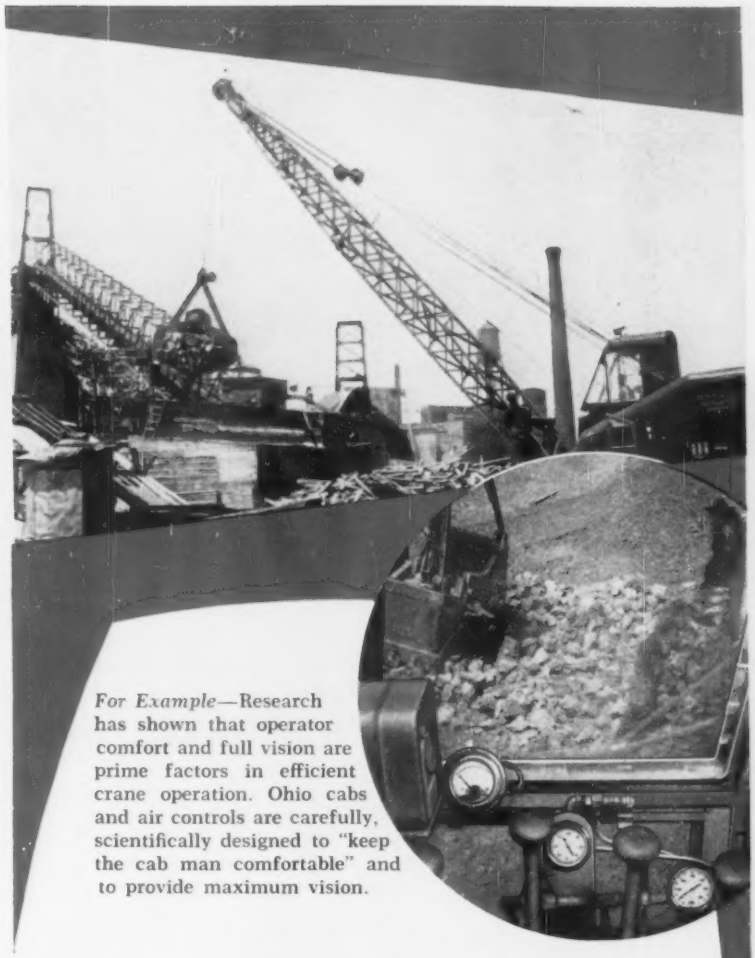
If you are looking for real opportunity, recognition, and advancement, it will pay you to investigate the positions now open in our growing research and development program. Our papers have a wide range of final application and involve the use of many unusual natural and synthetic fibres and processes, the latest saturants, beater additive resins, etc. We have the finest equipment, modern laboratories, and pilot plants—everything you could want for interesting, challenging work.

Prefer Pulp and Paper School graduates, men with degrees in Chemistry or Chemical Engineering, or the equivalent in practical experience. Direct knowledge of paper production processes helpful.

Salaries open—plus unusual incentive plan. Attractive New England location. Travel expenses paid for men selected for personal interview. All replies confidential. Please send outline of experience to Box 287, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.



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Ohio Cranes are made to last longer. They are more easily serviced — meaning less down time and less tendency to overlook servicing remote points because they are difficult of access. Inherent quality and ease of servicing mean lower cost per year — through many years. If you have a material handling problem you are invited to discuss it with one of our sales representatives or engineers. There's one near you — a note from you will get prompt action! Write today!

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Self-Feeding...

Only the new McCulloch D-44 direct-drive chain saw cuts with a *light touch* – it feeds itself into the wood! Lightweight, compact and perfectly balanced, the D-44 easily outperforms all other direct-drive saws. Only $238 up.

Try it.

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Less Down Time Lower Maintenance

The most powerful one-man chain saw you can own

You get more of the features you want in the Homelite 7-29:

Less down time because the famous Homelite precision design features high-compression, short-stroke engine which prolongs life, cuts gas consumption, starts quickly in any weather.

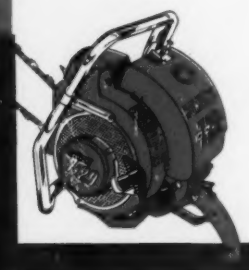
Lower maintenance with a belt drive that eliminates stretch, never requires adjustment or lubrication; built-in governor keeps engine at proper speeds, stops excessive wear and greatly prolongs life of the saw by reducing vibration, eliminating damage due to engine racing.

More production, greater profits with this powerful Homelite 7-29 that does every kind of cutting needed for high-production operation. Easy to operate, easy to handle, the perfect balance makes every type of cut in any position.

See your Homelite dealer for a free demonstration of the most powerful one-man chain saw you can own — the Homelite 7-29.

7 HORSEPOWER

29 POUNDS



Homelite builds and sells more chain saws than any other company in the world.

COMPLETE LINE OF CHAIN SAWS FOR EVERY CUTTING JOB

Model 17 — an all-purpose saw that brings down trees up to 4 feet in diameter. Available with special brush cutting and clearing attachments for complete versatility. 3½ horsepower, 20 pounds.

Model 5-20 — All the versatility of the 17 with added power. 5 full horsepower — 20 pounds. Brings down trees up to 6 feet in diameter.

Model EZ — lightest, most powerful direct drive chain saw ever developed. Only 19 pounds, full 5 horsepower. Brings down trees up to 3 feet in diameter.

HOMELITE

A DIVISION OF TEXTRON INC.

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Manufacturers of

carryable pumps • generators • chain saws • blowers.

There's something new
in the tall timber

IT'S THE OLIVER OC-12
WITH POWER-TURN STEERING

POWER-TURN

Yes, with Oliver's amazing POWER-TURN you'll work faster and save money. You'll do it because you'll have *full power* on both tracks at all times. Think of it: full-time working power—with no loss of tractive force even on the sharpest turns. This extra productive capacity is yours with whatever attachments you may use—bull-dozers, angle dozers, winches or loaders. Not only do you have better control for every maneuver—but you also have *easier* control with finger-tip steering that means less fatigue and bigger production on every job. Only Oliver has POWER-TURN!

It's one of the most powerful crawler tractors of its class—ready to help you put extra speed and push into all kinds of tasks in the woods or around the mill. Available with a full choice of attachments. Oliver's extra high clearance lets you ride over rocks and stumps that force other crawlers to detour. Through soft, boggy ground or up steep hills you have the sure-footed traction that means more work per day.

Here's 53 drawbar h.p. for the tough road-building jobs. Among the new features on the OC-12 is the new over-center hand clutch with 33% larger area which doubles clutch life. It's impossible to ride this clutch. Also new is the easy-operating foot brake which requires only light pressure to hold the tractor on any grade. It frees operator's hands, increases over-all efficiency. Ask your Oliver distributor to demonstrate the new OC-12 today.

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

OLIVER

A COMPLETE LINE OF INDUSTRIAL WHEEL AND CRAWLER TRACTORS AND MATCHED ALLIED EQUIPMENT

60 SECONDS AGO..

THIS

...WAS A 40' LOG with a 40" BUTT-DIAMETER entering a

SUMNER 175" CHIPPER!

This demonstration of speed, precision and dependability is typical of the numerous Sumner Chippers of all sizes to be found in sawmills, veneer plants, pulp, paper and board mills in all parts of this country, Canada, Australia, New Zealand and the world.

In addition to this 175" whole-log chipper — which produces nearly 400,000 units of chips annually, Sumner manufactures a 153" chipper for up to 32" diameter logs; 112" and 84" chippers for smaller logs, pulpwood and cant sections; and a range of 72", 66", 42" and 36" chippers that include the famous Sumner Wide Spout Wastewood, Veneer, Peeler Core and Rechippers . . . each designed with a purpose and size available to meet each operational requirement.

Sumner has the distinction of building the largest and the smallest as well as the widest range of chippers, including all accessories . . . regardless of size, output or other woodroom requirements.

Your inquiry will receive our immediate attention.

SUMNER IRON WORKS
Since 1892
EVERETT, WASHINGTON

How Close Attention to QUALITY takes Pulpwood Profits out of "Deep Freeze"

Quality in manufacture — Gleason flame hardening instills long-life wearing quality where it counts most on gears and pinions—extra hardness where drive teeth mesh.

Quality in materials — Carefully measured alloys are added to 8-ton charge in electric furnace; heats are triple-tested to exacting specifications — extra assurance that only the best materials go into Bucyrus-Eries all down the line.

BUCYRUS ERIE

On snow-covered tracts in northern Minnesota and in temperatures to 50 degrees below zero, Bucyrus-Erie 22-B's are important factors in profitable pulpwood production. They're moving lumber that might otherwise spend the winter in "deep-freeze" . . . along with the logger's profits. Deep in the woods, the Bucyrus-Erie 22-B shown above uses a Mack ¾-cord pulpwood grapple to load 100-in. bucked logs from stockpile to truck . . . averages 450 cords per 10-hr. day. At railroad transfer points, three other 22-B's keep busy unloading trucks, stockpiling, and loading flatcars.

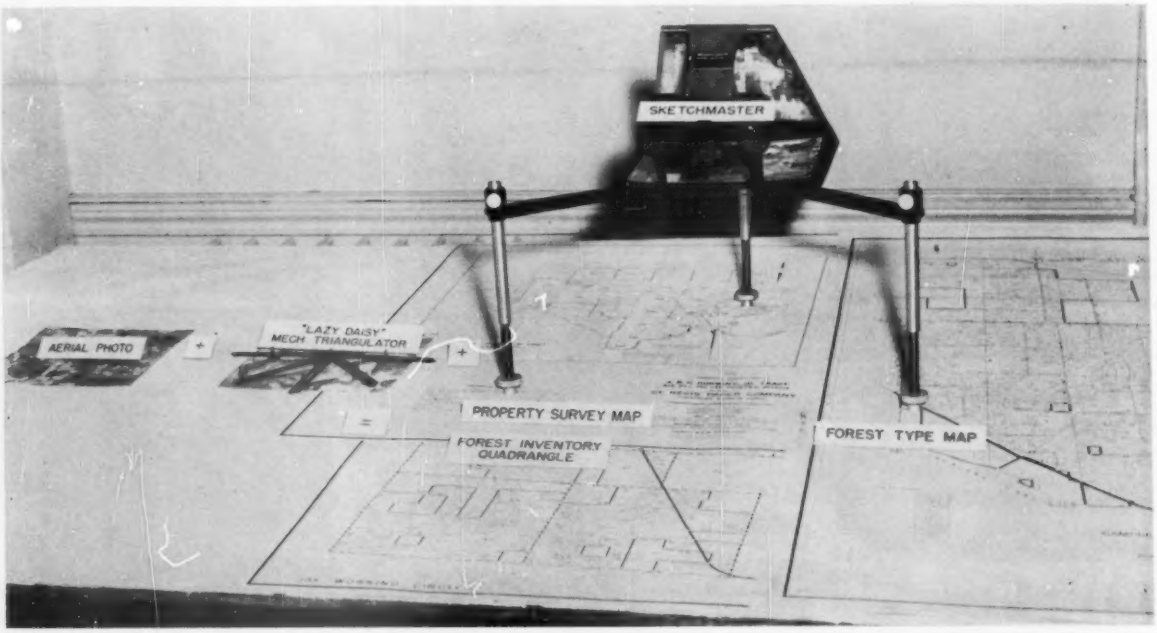
Rugged durability that withstands the elements is a direct result of Bucyrus-Erie's constant close attention — during manufacture — to the little things that mean outstanding quality. At Bucyrus-Erie, quality comes FIRST — in design, materials, manufacture and service. At work in pulpwood country, it means steady high production at low cost year after year.

See your nearby Bucyrus-Erie distributor today for information on the popular ½-yd. 15-B and ¾-yd. 22-B models, each convertible to shovel, dragline, clamshell or dragshovel front end for excavating duties. For rubber-tired mobility, ask him about the 15-B and 22-B Transit Cranes.

232E56

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin



TOOLS USED BY ST. REGIS SURVEYORS are shown in this picture taken at Jacksonville. Aerial photo (left) plus "Lazy Daisy" mechanical triangulator plus Sketchmaster equals any of the different types of maps required in sound woods management, among them the forest map, property survey map and forest inventory quadrangle.

How St. Regis Plots Woodlands

Woodlands department attacks surveying problems with Aerial photos, sketchmaster, triangulator and other schemes

By JOHN G. BARNARD

Chief of Maps and Surveys, St. Regis Paper Co., Jacksonville, Fla.

● Industry has a far larger stake in surveying and mapping than is commonly realized. As a function of the St. Regis Woodlands Division it plays an important part in the management of nearly 1,000,000 acres located in the lower South. The reason: One of the first steps necessary to carry out conservation and land management of millions of acres of forest land is physically to define the boundaries of these lands and delineate all pertinent facts pertaining to them on maps.

Basically our surveying problems in the paper industry are no different from those encountered by the private surveyor. We run into the erroneous deed, removal or alteration of physical boundaries, conflicting testimony of persons professing to have knowledge concerning the position of boundaries, conflicting court decisions—or lack of them, adverse possession and other major headaches.

The private surveyor, however, usually surveys his own "back yard." He knows the area or eventually becomes thoroughly familiar with it, with the type of markings used on lines and witness trees and the adjustments which must be made on old deputy surveyors' notes. In the pulp and paper industry we have no "back yard." Our lands spread out over four states and dozens of counties and just as many different state laws and deputy surveyors' eccentricities.

We face another problem, too. The private surveyor is usually responsible to only one client. We are responsible to a board of directors and stockholders. Our relations with the public must therefore be carried out so there are no ill feelings between the company and the public. As a result we find that we are not only land surveyors, but public relations men as well. We have found the only successful formula is honest and competent land surveys.

HOW ST. REGIS DOES THE JOB . . . In order to settle the problem of land lines for once and for all, St. Regis has designed its surveying and mapping program to insure that these lines will be permanently marked. To do this, our forestry men continually work to keep marks and monuments from being obliterated.

Original survey notes and plats of a particular area are acquired from

the Commissioner of Agriculture at the state capital. At the same time we also order the most recent contact aerial photographs of the same area from the Commodity Stabilization Service, U.S. Dept. of Agriculture, in Washington, D.C.

We then run a survey crew on a closed control traverse (or a series of them depending on the size of the tract) beginning at a government or state monument on which we have state plane coordinates. This traverse is always run throughout the tract and is closed either on itself or on another government monument.

For speed we traverse existing roads and we utilize as many geodetic stations as practical. Control points are carefully placed since they will be the basic control for our boundary surveys and we wish them to be permanent—at least until the survey is complete. The party chief, meanwhile, locates existing section corners and "pricks" their location on aerial photos. This completes the preliminary field work.

Control traverses are then set up and computed by latitudes and departures to check for angle and chaining errors. The relative error of chaining closure shall not be less than 1 to 10,000 and the angle error shall not exceed 30 seconds times the square root of the number of angles. When these standards are met the survey is balanced out, giving us a supplementary control system based on the state plane coordinate system.

We now plot our control traverses on a map sheet using the coordinates, not bearings and distances, as computed on the state plane coordinate system. Next we transfer the desired planimetry from the aerial photographs to this map sheet with a vertical sketchmaster. This is a lightweight portable optical instrument that can correct tip and tilt in aerial photos, and can also be adjusted for various map scales. Such an instrument is essential in our work because the contact prints we order are usually on a scale of 1 to 20,000 and our map scale is 1 to 15,840, or 1 inch = 20 chains. We could order our photographs on a scale of 1 inch = 20 chains but these photographs are also used by our foresters in their forest inventories and typing, and the contact prints have less distortion than a print that has been either enlarged or reduced. So we utilize photographs that afford the foresters the most accurate interpretations—the contact prints.

HOW THE SKETCHMASTER IS USED . . . Since our control network traversed existing roads it is a simple matter to orient our aerial photographs on our map sheet. We simply place a photo containing part of that road into the sketchmaster and adjust the sketchmaster until the road in the photo is projected directly over the road on the map sheet. With the photo thus properly orientated, the draftsman sketches from the aerial photographs to the map sheet all the planimetry that would be of benefit to running a survey, such as roads, railroads, fields, rivers, branches, streams, ponds, etc. After this initial adjustment is made it is generally not necessary to make any further adjustments for scale.

No great effort is made at this time to obtain too accurate a map. We are merely preparing a base map for use by the survey crew only. On this base map we now project the original survey using the original plats and notes, controlling the projection from the known corners that the party chief had previously located in the field and on the aerial photographs. These corners were transferred from the photos to the map sheet along with the planimetry.

Our next step is to take the deed covering the tract and plot those descriptions on this base map. We now have a map showing the property lines we will survey, as well as an accurate road map enabling us to come and go to any point on the tract we desire.

We have found such a map to be useful in many other ways; for example, many times the fields shown on this map assist us in locating section lines and section corners; we can determine whether to run our lines through swamps and ponds or around them on our trial lines; we can determine whether to traverse the edges of hammocks along rivers and chain in offsets, or whether to traverse the rivers edge. In other words, we always have a picture of what is before us, and we can plan our surveys accordingly.

In the course of establishing the old section lines and corners, we use methods familiar to all surveyors.

MARKING THE BOUNDARIES . . . Boundary lines which have been proven or agreed upon are well marked with one blaze over two chops and painted with aluminum paint. These marks are blazed and chopped into the trees along the boundaries on both sides of the actual line, indicating that the line is between two such marks facing each other.

Property corners and section corners are re-established with concrete monuments with the words "St. Regis" on opposite sides of the posts. These monuments are witnessed by marking the nearest available trees with an "X" or over two chops facing the corner. These marks are painted with aluminum paint and the tree is also banded by three painted bands.

JOHN G. BARNARD, Chief of St. Regis Maps and Surveys Division, is author of this exclusive PULP & PAPER article on surveying.

All our computations are made by the latitude and departure, double-meridian-distance method. The state plane coordinates, which originate from the Coast and Geodetic surveys, are computed for each of our traverse sections. The final map is plotted from these coordinates, and thus the location of any of our tracts can readily be determined within the state.

MAPPING PLAYS MANY DIFFERENT ROLES . . . The preparation of boundary maps from our surveys is only one of our many mapping projects. Mapping plays a leading role in land acquisition since it is used to outline lands to be bought and the final maps are usually submitted to the Board of Directors in the report of the transaction. Boundary maps are plotted on the state plane coordinate system from notes computed in our closed transit boundary surveys. This is the map which is the basis for all future mapping projects.

Still another, and the most important part of our mapping program, is our forest inventory quadrangles. This is a program in which we are in the process of mapping our entire Southern holdings in quadrangle form.

FOREST INVENTORY QUADRANGLE PROGRAM . . . Each township in which we have holdings will have a quadrangle. The township will actually be the basis of our quadrangle system. St. Regis has designed a quadrangle sheet which will be lithographed on linen in large quantities. These printed quadrangles will be one size and will be punched to fit a binder. Border, title and legends will be printed on each sheet to save time and money consumed putting this information on each quadrangle.

Mapping of quadrangles would be relatively simple if we were fortunate enough to have boundary surveys on our entire 1,000,000 acres of holdings in the South. Since our surveys are

not complete, however, it is necessary to have maps of our holdings for formulated management plans. Accurate but speedy mapping plans were thus inaugurated. Aerial photos fulfilled requirements for both planimetry and forest inventories. Since an accurate map was desired, it became necessary to adopt a system to eliminate errors due to tip, tilt, relief displacements or scale changes.

The radial-line control network system was decided on as the best for our purposes. After such a network has been assembled, it is possible to plot all radial-line control as established on the photos, onto the map base by marking the intersections. These intersections will be the geographic positions of the points on the map base. The device we use for transferring all our radial-line control from the photos to the map base is the "Lazy Daisy" mechanical triangulators.

Once the control network has been obtained detail from the photos must be added to produce the final map. There are a variety of instruments available for such purposes, but we decided on the sketchmaster because of its economy and speed.

So. Carolina Studies Forestry Proposals

A special committee set up to study forest fires in South Carolina this month broadened its scope to take a sweeping look at needs for forestry research in the state.

Among those who appeared before the nine-man committee were representatives from West Virginia Pulp and Paper Co., Bowaters, Champion Paper & Fibre and several leading lumber companies. One of the suggestions was that the committee set up a forestry research center at Clemson College.

Among the recommendations made by professional foresters to the committee were: Develop effective practices for the management, reforestation and handling of bottom-land hardwoods; determine the best methods for converting scrub-oak tracts into profitable stands; study hardwood genetics; study insect and disease control; inventory the state's timber resources at more frequent intervals; develop improved management practices for short leaf and loblolly pine; determine the best species of trees to grow various sites and in various soils.

Pulpwood Personals

Directors of Frank G. Hough Co., Libertyville, Ill., a subsidiary of International Harvester Co., have elected **FRANK G. HOUGH,** founder and president, to the newly created office of chairman of the board. **G. A. GILBERTSON,** formerly executive vice president and general manager, was elected president and chief operating officer. . . . **CHARLES L. MOREY,** formerly timber division manager of Fibreboard Products, Inc., joins Crown Z's Portland office as head of chip procurement. According to Vice Pres. **E. P. STAMM,** chips accounted for nearly one-third of all wood consumed last year by Crown's Oregon and Washington mills—equivalent of 425,000 cords pulpwood representing annual growth on 200,000 acres of Douglas fir tree-farm land. All this from leftovers. . . . **GEORGE L. DRAKE,** retired Simpson Timber Co. executive and chief of forestry, has been named to head the annual fund-raising campaign of the Forest History Foundation, Inc. He will be aided by a group including **MACDONALD S. DENMAN,** Crown Zellerbach; **HAROLD S. FOLEY,** Powell River Co.; **E. L. KURTH,** Southland Paper Mills; **JAMES L. MADDEN,** Scott Paper Co.; **G. W. E. NICHOLSON,** Tennessee River Paper Co., and **FRED K. WEYERHAEUSER,** Weyerhaeuser Timber Co. **GILBERT E. LIMING,** chief forester for the northwest timber division, Rayonier, Inc., Hoquiam, Wash., has been appointed chief forester for the Georgia-Pacific Corp., Portland, Ore. G-P's west coast forestry activities now extend from California to Washington and northward to Alaska.

CLIFTON B. MARLIN, 35-year-old Mississippi State graduate and holder of a master's degree in forestry from Duke U., succeeds **JIM CRAIG** as state forester for Mississippi. Jim left the post to return to private business. . . . **JAMES F. McCORMACK** of the Southeastern Forest Experiment Station, who was assistant to the late **J. W. CRUIKSHANK** for many years has been appointed to take Mr. Cruikshank's place. The head of the station died recently. . . . **BILL BRIDGES, JR.,** of Union Bag-Camp Paper Corp., Savannah, has been named a member of the board of directors of the Forest Farmers Assn. . . . **J. C. TURNER, JR.,** has been named chief of information and education of the Georgia Forestry Commission. He succeeds **R. E. DAVIS** who resigned the post to accept a position with Champion Paper & Fibre Co. at Canton, N. C. . . . **CHARLIE ROBERTSON,** formerly conservation forester for IP at Panama City, is now at Camden, Ark., assigned to company timberlands. **JEET ROWELL** replaces him at Panama City. . . .

G. B. AMIDON has been appointed director of woodlands for Minnesota and Ontario Paper Co. Formerly director of forest management, Mr. Amidon moves to his new position with 20 years experience in forest management and wood procurement. He will now also administer purchasing of wod and production.

T. L. McLINTOCK replaces **KEN POMEROY** as head of the Lake City Florida Research Center. Mr. McLintock was formerly center leader of the Penobscot Research Center, Bangor, Me. . . . **DAVE BRUCE** will head the new Forest Fire Research div. of the Southeast Forest Experiment Station. . . . **"SKIP" STREETMAN** is the new rep for American Forest Product Industries, Inc., in Atlanta, Ga. His predecessor, **TOM BOYLAN,** joined the Convention Bureau at Chattanooga, Tenn. . . .

West Virginia Pulp & Paper Co.'s Covington mill has made several new changes in woodlands personnel: **RICHARD F. BABBITT,** formerly at the Appalachian Experiment Project, goes to the pulpwood dept. as forester; **ED SENTER,** 1951 graduate of Syracuse University, joins the company at Covington as a forester; **DAVID ERB,** formerly in the wood dept. at Lynchburg, Va., becomes dist. supt. in charge of procurement; **JOHN HARMON,** of the Univ. of Georgia, goes to Covington as dist. supt. in charge of procurement there and **ROBERT GILLIAM,** formerly supervisor of the woodyard at Covington is now supervisor of land acquisition. . . .

LOG SORTING AND SELECTION OPERATIONS ARE NO PROBLEM with this Pettibone Mulliken Speed Swing which is ideal for these and dozens of other jobs in the log or lumber yard. The 180° boom swing permits the Speed Swing to load and then sort logs or lumber to any side of the machine in fast time and without maneuvering. Only the load need be swung and not the loader. The Speed Swing has large flotation tires and powerful no-clutch power-shift, planetary-axle drive. Is available with 2 or 4-wheel power steering. Pettibone Mulliken Corp., 4700 West Division St., Chicago 51, will provide full information.

A Pulp & Paper Photo

SAFETY CONSCIOUS WEST VIRGINIA MEN at this South Carolina concentration yard a few miles from Summerville wear hardhats, safety shoes. Note truck, too, which has steel grating to protect driver from falling logs as well as a safety glass windshield and canvas over top of cab to keep out bark and log dust. These are all standard equipment in West Virginia Pulp and Paper operations.

How West Virginia Sold Safety

Woodlands Dept. made supervisors key men in program; continuous training and professional instruction provided

By W. LANG FOSTER*

Safety and Fire Control Director, Woodlands Dept., West Virginia Pulp and Paper Co., Summerville, S. C.

● West Virginia Pulp and Paper Co.'s Woodlands Department has the responsibility for supplying its six mills with the million and one quarter cords of pulpwood used annually at a cost of almost 22 million dollars. The department also manages a 20,000 acre experimental forest in South Carolina; and, on a "Forestry by the Acre" basis, it manages over 800,000 acres of company owned woodlands located mostly in North and South Carolina (see article "No Lost Cords at West Virginia," PULP & PAPER, June 1956 issue, page 103).

Particularly since 1954, recognizing that good forestry is safe forestry, the company has developed an organized safety program.

FOREMEN ARE KEY MEN . . . Taking first things first, we had to find the causes of accidents before we could get our accident prevention machinery in motion. We started to analyze our accidents each month as they occurred by direct accident causes, types, locations, parts of body injured, and nature of the injury. Recognizing that score keeping is important in any such program, an accident report form was developed.

This analysis brought to light targets toward which our accident prevention efforts should be directed. We recognized that accidents are caused by unsafe acts or unsafe conditions and that they can best be controlled by the employe's immediate supervisor. Based on the Heinrich statistics showing that 330 exposures will result in 29 first aid treatments and one hospital case, we encouraged our foremen to recognize that there are 10-to-1 odds in favor of prevention and that they have repeated opportunities to take effective accident prevention action. Every effort was made to train the foremen to recognize the basic types of unsafe acts and unsafe conditions and the steps they should take to correct them.

With these recognized facts, our groundwork was laid. Supervision, trained in accident control, is the key to success, and it has proved to be our most effective method of accident prevention. To prepare ourselves for the all-important task of giving the necessary supervisory training, we called upon those with know-how: The National Safety Council; Alfred Lateiner, training and safety consultant, whose advice had been effective in West Virginia Pulp and Paper Co. mills; and our own mill safety directors. As the program progressed, we familiarized ourselves with causes and preventative measures.

A comprehensive course in accident control was conducted with all supervisors in small groups at various locations over the state. H. H. Jefferson, safety and training engineer with the American Pulpwood Association, gave us training in the proper transport and use of hand tools. He discussed proper clothing for woods workers and safe design of labor truck bodies. Hercules Powder Co. taught us the proper techniques on the use of dynamite in road construction and drainage work.

TWO FACTORS INTENSIFY PROBLEM . . . One is the fact that West Virginia Pulp and Paper Co. manages 800,000 acres scattered over a good part of North and South Carolina and Georgia. My duties cover 400,000 acres in South Carolina and Georgia which, under our program of decentralized management, are divided into six districts. The accident reduction program is directed from the central office by the safety director, or coordinator, and the line of responsibility is placed with the district foresters in

*This paper was presented by Mr. Foster before the Wood Products Section of the 44th Annual Safety Congress, in Chicago Oct. 24, 1956

YOU NEED A STRAW BOSS TO MAKE HAY WITH SAFETY. This is what W. LANG FOSTER (middle), Safety and Fire Control Director, West Virginia Pulp & Paper Co., Summerville, S.C., woodlands concentration yard base, told the Wood Products Section of National Safety Congress in Chicago. He emphasized role of foreman. Discussing his speech are R. C. CHILDRESS (left), Vice Chairman of Wood Products meetings, who is with Cooperage Div., National Distillers, Memphis, Tenn., and BYRON M. OYSTER (right), Safety Director for all Weyerhaeuser operations, headquarters in Tacoma, Wash., Moderator of the session.

charge of each district. Stress is placed upon the coordination of efforts through good communications.

The second factor is that our management program necessitates the hiring of large, temporary labor forces of untrained men during tree planting seasons, periods of high fire danger, and at various other times. It is not only necessary but imperative that these new employes be given some job training—not just how to do the job, but how to do the job safely. We depend on the foreman to do this job because he is the man closest to the worker.

To illustrate this point we tell this story to our supervisors: "A man, his small son, and the boy's uncle were out fishing. The father was on one side of the stream with the boy and the uncle on the opposite side. The little boy got into a boat, and, before he was noticed, drifted out towards the waterfall. The uncle had an oar with which he could have reached the boat as it passed him. But he felt that the father was the one to take action. The boat went over the fall and the boy drowned. People thought the uncle was responsible because he had the o-a-r—opportunity, authority, and responsibility."

TRAINING IS IMPORTANT . . . We have trained our key people in the job instructor training method for new workers and for retraining old employes assigned to new jobs. We follow this up continuously to see that foremen are taking the necessary time to do this training properly. The four-step method involves:

1. Preparing the learner for the job by stimulating his interest, developing his desire to learn, and stressing the importance of the job. The foreman must determine how much the man knows about the job so he can start the instruction at the right point.

2. Present the new knowledge or skill in a clear, understandable manner, step by step—avoiding the use of trade terms that may be unfamiliar. Stressed key points—things that may injure or damage or interfere with safe efficient operation.

3. Performance by the learner comes next—we learn by doing—at first under close observation of the foreman. Errors and unsafe practices must be picked up immediately and consistently. The learner should also describe what he is doing so the instructor can check his understanding. The forman should give him credit for learning. This builds needed confidence.

4. Put him on his own. A learner gets nervous if you stand over him after he is operating correctly—leave him, but be sure to let him know where to get help or advice when he is uncertain. Check back frequently. Gradually taper off the close supervision. Give the learner a timetable to work against and he will learn faster. Keep a record of learning time for future reference.

FIND THE CAUSE—NOT THE BLAME . . . A very important part of our accident reduction program is the reporting of accidents by the supervisor. We use the Lateiner Domino form. Emphasis is placed upon cause rather than blame. Supervisors and workers are willing to correct causes. "Blame" carries a stigma which would tend to make them alibi. You can easily see that this would hinder rather than help any program. Just as one purpose of fire reports is to compile data showing frequency of occurrence, accident reports are used for the same purpose to point out frequency of cause and to show weaknesses. Keeping score of accidents by nine separate groups within our own Summerville division has developed a competitive spirit.

8-POINT PROGRAM . . . These methods have proved beneficial in our war against accidents:

1. Appointment of a safety committee to serve six months; a new committee is then named. Functions are to make a monthly inspection of work in progress, equipment, buildings, and facilities in one or more of the nine groups; a monthly meeting to review accidents, discuss, and pass on recommendations received, make new recommendations, and conduct other business pertinent to our accident reduction program.

2. Accident control training for supervisors.

3. Prominent display of safety posters put out by National Safety Council, including jumbo posters.

4. Participation in National Safety Council and South Carolina Accident Prevention Council.

5. Wearing hard hats made mandatory for all field personnel. Hats are furnished by the company. Goggles are required for work in eye-hazardous jobs.

6. Encourage the wearing of safety shoes by all field and shop personnel by obtaining shoes at cost for employes. While not required, this practice is recommended and compliance is near 100%.

7. Safety seat belts installed in all vehicles.

8. Protective canopies installed on all tractors.

Numerous other devices employed to further our efforts include first aid kits, snake bite kits, tick shots, fire extinguishers, rubber boots, showing of safety films and a bronze plaque to be

awarded the group having the best safety record.

PROGRAM AROUSES ENTHUSIASM . . . Employe participation has been good. An example of interest is the number of comments received by the safety director from men in the field. When they study a job before tackling it, they consider it from the safety standpoint. Another way in which their interest is shown is that when you visit them, they are as apt to talk about accident reduction as a Texan does about Texas.

Many of our injuries have been caused by such things as spider bites, poison oak, insect stings, stump holes hidden by grass and weeds, and other hazards for which we have not found practical means of protection. Forest fires present many problems such as dense smoke and hazardous terrain. Much fire fighting is done at night which accentuates these hazards. The more hazardous the conditions, the more important it is to make our men safety conscious.

In summarizing, effective methods of accident prevention result only from a good program which has the sincere backing of top management and has been successfully sold to the supervisors and workers. High interest must be maintained. This is a harder job than selling the program and requires continuous effort, imagination, and ingenuity.

Offers Safety Code for Other Loggers, Chain Saw Operation Safety Is Taught

● Instruction for safe operation of chain saws and other forest equipment and development of a company Safety Code available to mills were among highlights of papers given at the 44th Annual National Safety Congress of prime interest to logging men.

There was a "Pulpwood Logging" meeting of the Pulp and Paper Section of the Congress. The Wood Products Section of the Congress, one of many divisions of that mammoth organization which drew 12,000 delegates to Chicago in late October, also had papers of interest to the pulpwood logging people.

At a joint meeting of the two groups, an 18-minute movie on safe use of power saws in color was presented by K. M. Murdock, acting secy.-mgr. of the Pacific Northwest Loggers Assn. (see in forepart of this issue other reports in the Safety Conference, including the Pulp and Paper Section developments).

ONTARIO MILL OFFERS ITS SAFETY CODE . . . In Ontario, the pulp and paper mills have done an outstanding job in training woodlands workers in safety habits and practices. Cordner C. Wright, supt., industrial relations, Spruce Falls Power & Paper Co., told the "Pulpwood Logging" session how his company now gives instruction courses in safe use of power saws to all of its crews.

Hard hats have been made compulsory in the woods by Spruce Falls.

A Safety Code drawn up by his company is available to others who are interested, Mr. Wright offered to send a copy to any who wrote him a request for it.

A big turnover in woods forces and the high potential of danger in woods work has made the safety instruction job a hard one, he said. Also, the fact that 65% of the workers speak only French. The Spruce Falls Safety Code is published in both English and French.

He said in 1951 his company made 8,000 hirings to keep up a force of 1,200. The turnover is not so great now, but it is still a problem, he said.

PAUL BUNYAN'S ROUGH-AND-READY LOGGING METHODS ARE PASSÉ . . . So said C. S. Miller, district logging supt., Manitoba Paper Co., Ltd., Pine Falls, Man. He described what he called the "safe-logging" method at the same session. He described protective clothing, safety education and a follow-up program of meetings and safety code administration in complete detail.

He said manpower and production losses make it imperative that accident-prevention be practiced more strenuously.

"Logging can be made safer and woods accidents can be reduced," Mr. Miller said. "To do this, a new method of logging must be adopted and given the status and recognition it rates. This new method of logging is 'safe-logging.'"

WOMAN SPEAKS TO LOGGERS . . . One of the featured speakers in the Wood Products Section, chairmanned by Robert Gilmore, Rayonier's general safety director, was a woman. She told logging men (and others) "the best thing about the good old days is that they're past."

Mrs. Bernardine Holman, R.N., the speaker is director of occupational health nursing, Employer's Mutuals of Wausau, Wis.

Modern methods of occupational health have helped in accident prevention, she said. She cited such innovations as pre-placement and periodic medical examinations, establishment of minimal acceptable physical standards for particular jobs, continuous health education and improvement of plant health and sanitation standards.

"With the help of realistic, nonnostalgic management—men who look forward into tomorrow instead of into yesterday's backwoods of low standards and disinterest—our important

SAFETY PROGRAM PAYS OFF. CORDNER C. WRIGHT, Supt. of Industrial Relations, Woodlands Dept., Spruce Falls Power & Paper Co. Ltd., Kapuskasing, Ont., shows how his company carries out a program of instruction. He said special courses on safe use of power saws are being given to all woods crews.

goals of better occupational health and safety will be achieved and maintained," Mrs. Holman said.

EFFECTIVE METHODS OF ACCIDENT PREVENTION . . . Roy Schoenig, Safety Director, Curtis Cos., Inc., Clinton, Iowa, also featured speaker at the Wood Products Section of the Congress said getting every individual employe's attention and cooperation in safety efforts is vitally necessary.

The Clinton Division, with an employment of about 600 persons, has ten members on a safety committee, five of whom are shop stewards and five are management representatives with Mr. Schoenig, safety director, acting as an ex-officio member coordinating all that relates to safety between management and employes.

The committee meets each month. There is a plant tour on the day preceding the meeting. The committee is divided into three groups for the tour, each group covering one third of the entire plant area. The group members and the areas covered are alternated each month.

Two management representatives are permanent members, the personnel representative and the company nurse. They serve along with three foremen. The shop stewards are appointed by the union. The union usually replaces two members one year and three the next. The company having two permanent members will replace one of the other three one year and two members the next; this gives the safety program continuity.

Each finding of the tour is recorded and discussed, and when the apparent solution is reached it is listed in the minutes as a recommendation from the committee to management for immediate action. Copies of the minutes are posted on all bulletin boards and each foreman receives a copy at his desk. The plant superintendent has instructed every foreman to check the recommendations that pertain to his department and to make out maintenance orders at once for anything that he cannot take care of himself.

In 1946 the Clinton Division of Curtis Cos. was acclaimed as the first manufacturer of millwork to ever operate in excess of a million manhours without a lost time injury. Since that time it has exceeded that effort many times and presently hold the world's record of 3,634,107 manhours performed in 1,065 days.

HEALTH FACILITIES FOR FAMILIES . . . His company extends the use of certain of its health facilities to employe's families as well revealed by Mr. Schoenig.

He said the wood products company's registered nurse is provided with a car that has a stretcher-carrying device built in. This equipment is used primarily to transport workers to and from their homes or hospital in the event of illness or injury, he said. In addition, members of employes' families may use the service. The company's equipment includes a respiration device, hospital beds, wheel chairs and crutches, also, he said.

"All of this may be borrowed free of charge on a first-come, first-served basis for members of the employes' family," Mr. Schoenig said.

A DRAMATIC PRESENTATION. J. F. RITHMILLER (left), Safety Engineer, Lumbermens Mutual Casualty Co., used electrical equipment and stage props to dramatically show low voltage hazards in wood products industries. ROBERT M. GILMORE (right), General Safety Supervisor for all Rayonier mills—in South and Pacific Northwest, presided at meeting and served as Chairman of Wood Products Section of the Safety Congress. Mr. Gilmore continues to serve on the overall Industrial Conference Committee of the Congress.

Revive C. J. West Award For Lake States Young Employes

The Dr. C. J. West Memorial award contest was abandoned in 1955 because of lack of interest among eligible young mill technical engineers and technical men in Lake States mills, but it will be held again in 1956.

Don J. MacLaurin, vice chairman of Lake States TAPPI, and technical director of Gilbert Paper Co., announces four copies of each entry must be submitted to him by Feb. 18, and winners will present papers in Appleton, Wis., Mar. 12. Candidates must be under 35. Employes in senior supervisory posts are ineligible, also any who have presented papers at National TAPPI.

For Bird Machine Co.

CALVIN A. KING (left), is new Assistant to the President, Bird Machine Co. and HENRY H. SHEPHERD (right), is now General Sales Manager. Latter will supervise sales in pulp and paper industry.

Birdseye, Food Process Creator, Also a Pulping Process, Dies

Clarence Birdseye, noted inventor of a food process—also a pulping process—died Oct. 7 in New York of a heart attack. He was 69.

Best known for his frozen food process which was sold to General Foods in 1929, Mr. Birdseye most recently has devoted most of his time to the development of a continuous process for making sugar cane bagasse pulp.

He was president of Peadco (Process Evaluation & Development Corp.), a company formed in association with W. R. Grace & Co. and John W. Bolton & Sons, Inc. For two years, 1953-1955, Mr. Birdseye resided at Paramonga, Peru, where his improved bagasse mill process was put in operation.

Baker Succeeds Embshoff

A. C. EMBSHOFF (left) has retired from active management of the Industrial Div. of Infilco Inc., manufacturers of water and waste treatment equipment, Tucson, Ariz., announces P. N. ENGEL, Pres. Mr. Embshoff joined Infilco 35 years ago. His wide experience in water treatment problems of the pulp and paper and other industries will still be available to the company as a general consultant to the Sales Div. ORLEN E. BAKER (middle) succeeds Mr. Embshoff as Manager of the Industrial Div. With the division 3 years, like Mr. Embshoff, he received his ch.e. degree from Purdue. C. D. (CY) EATON (right) is new Manager of the Pulp and Paper Div. He is a ch.e. graduate of New York U. and has had extensive experience as process engineer, chief chemist and staff engineer with national concerns in the industrial field. He joined Infilco 4 years ago.

another
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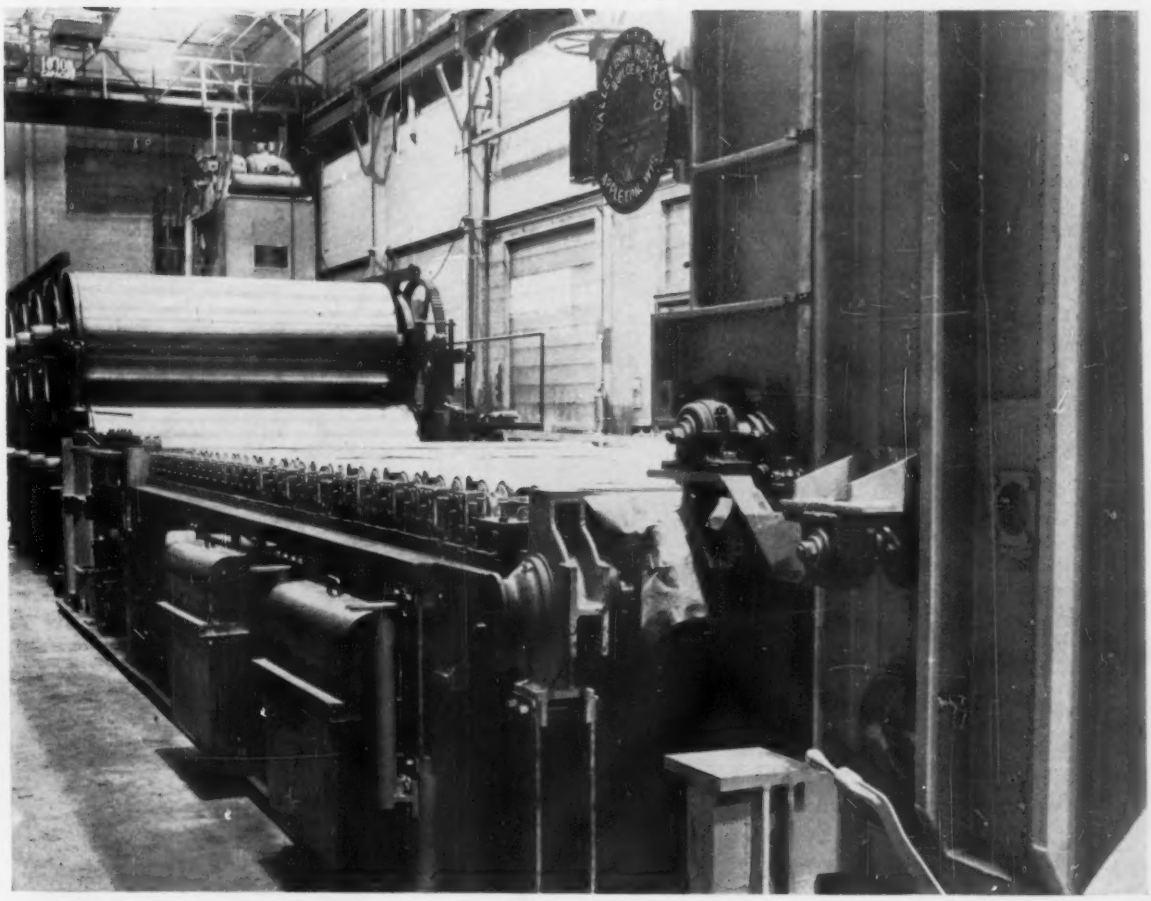

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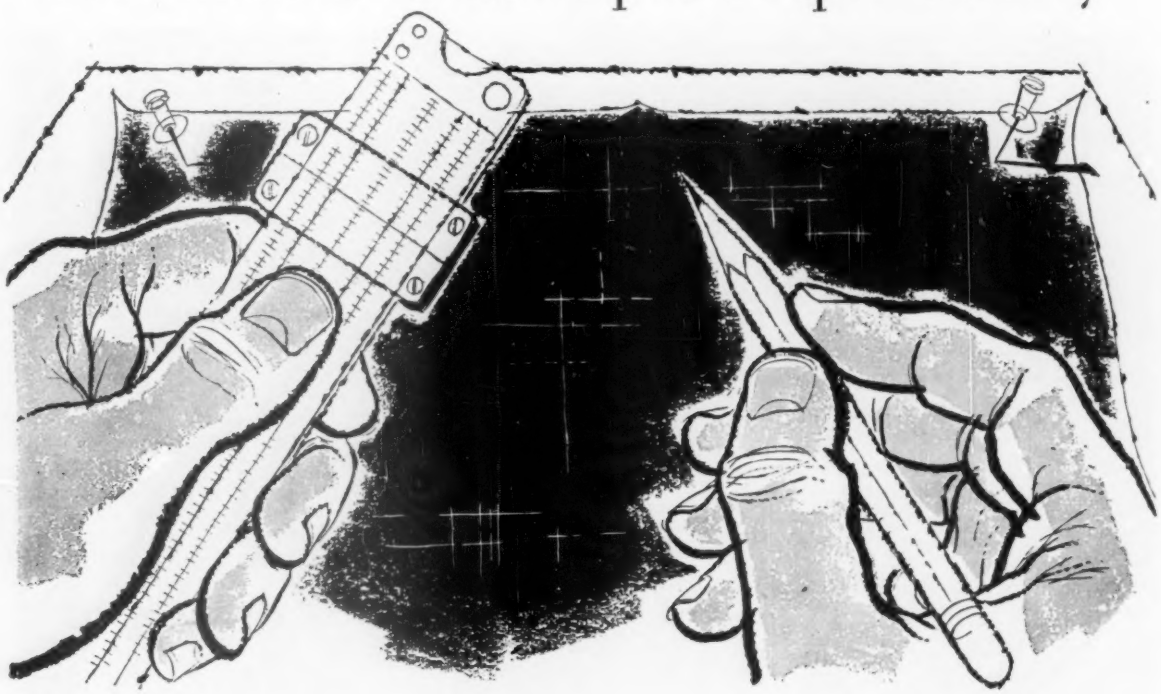

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STRICTLY PERSONAL

Southern Sidelights

Reflections on the Superintendent's Convention covered by Southern Editor Bill Diehl: Despite all the speeches the night of the banquet, the biggest hand of the evening went to **JOHN HOOVER,** paper mill supt. at West Virginia's Charleston Mill. John tried in vain to get to the convention but couldn't get there until midway through dinner the last night. He received quite a hand when he finally showed up. . . . **MRS. HOOVER** (as usual) won the prize for the biggest fish landed by a member of the ladies contingent. . . . John's son, **SANDY,** was a member of the Beloit delegation to the convention. . . .

GEORGE HARDAKER'S son, **TISH,** took his place alongside dad as a member of the hospitality committee and **FRED WILKERSON, JR.,** Appleton Wire Works rep, took over as the bachelor member from the committee from **BOB LINK,** who was escorting his pretty bride to the festivities. . . . Despite temptations of golf and fishing, there was quite a turnout for the mill tours through the new **ALBANY FELT** mill, the **MANHATTAN-RAYBESTOS** plant in Charleston and the **WEST VIRGINIA PULP AND PAPER CO.** mill . . . one of West Virginia's hosts was **VINCE KANE,** Annapolis graduate and new public relations director at the mill. . . .

NEW IN SOUTH—HILLIARD D. COOK (left) of Phoenix, N. Y., well-known figure in the pulp and paper industry, former research chemist, tour boss and asst. supt. in paper mills throughout the U.S., is now a member of the staff of North Carolina State College's Pulp & Paper Technology Dept. He will be a lecturer and consultant at the school. WILLIAM W. MARTENY (right) Tech. Dir. of National Container's Tomahawk, Wis., mill for past 6 years, has been appointed technical advisor in chemical pulp and paper production department of Robert Gair, Inc. He will live in Greenville, S. C., work under WILLIAM SCHNORBACH, Asst. to the Director. Mr. Marteny will work on long term planning and development of new facilities. He received a ph.d. from Institute of Paper Chemistry.

I thought it would be a nice gesture!

Loudest laugh of the convention was earned by **L. L. (BUSTER) GRIFFITHS,** Draper Brothers Co., when he awarded the prize for the 'high gross" and the "low net" both to **LARRY JOHNSON,** Birmingham manufacturers' rep. "If anybody can tell me how that happened I'd sure like to know," Buster commented. Later he blamed the "Coldeway Handicap System" evolved by **TOM COLDEWAY,** vice pres. of St. Joe Paper Co. . . .

DAN FESSIA, who hails from up north but spends a great deal of time traveling in the South, was present at the convention. Dan is now technical sales rep. for Geigy Chemical Corp. to all pulp and paper mills in the Southeast territory. He holds a degree from Notre Dame. . . . **ROBERT BOWEN,** former pulp mill supt. at North Carolina Pulp, is now gen. supt. at the Continental Can mill in Hopewell, Va. . . . Bob is chairman of the membership committee of the Chesapeake and Allegany Pulp & Paper Club, headed by **DR. ROBERT HOBBS,** of the Bureau of Standards, Wash., D. C. Next meeting: Dec. 7, Richmond, Va.

REUBEN B. ROBERTSON, Champion Paper Co. president and board chairman, entertained Vice Pres. Nixon at the company's North Carolina recreational site recently. . . . **M. L. (ARMY) ARMENTROUT,** senior management planning engineer at Champion's Texas Div., is doubling in brass—he's also civil defense director for the city of Pasadena, Texas.

Staff of the Scott Paper Co. Hollingsworth & Whitney Div. mill in Mobile, Ala., has been announced: **JOSEPH W. SHIMP,** plant mgr. **R. G. YOUNG,** asst. mgr., **ROBERT SCHANTZ,** ind. eng., **H. J. SMITH,** personnel mgr., **J. H. COIL, JR.,** asst. sec., **F. E. STABLER,** woods mgr. for the South. Production staff, headed by Mr. Young, includes **W. L. PERRO,** pulp supt., **S. D. ARANT,** paper supt.—kraft, **GEORGE LOCKBAUM,** paper supt.—tissue, **C. E. RIDENOUR,** finishing supt. Service staff, headed by **F. B. SMITH,** is **C. D. INGRAM,** tech. supt., **O. W. JERVIS,** power supt. **GEORGE ENSMINGER,** maintenance mgr., **R. A. YOUNG,** traffic mgr., **E. M. SCHEU, JR.,** procurement mgr., **R. S. BEAN,** plant engineer.

Representatives from 20 paper mills and 38 supply organizations attended the recent board of directors meeting of the Pulp and Paper Foundation, Inc., at North Carolina State's School of Forestry. Hosted by **PROF. C. E. LIBBY,** they toured the Pulp and Paper School's new $292,000 lab. . . . **KENNETH L. WEEKS, JR.,** is new supt. of the Olin Mathieson operations at Brunswick, Ga., expected to be in production by the first of the year. Mr. Weeks comes to Brunswick from the Olin Mathieson plant at McIntosh, Ala., where he was foreman.

ESCO sales district formerly known as ESCO-Los Angeles has had an name change and will be now known as ESCO-Southwestern Sales District. Change is due to ESCO's gradually growing coverage—it now includes all of Arizona, New Mexico, Texas and Southern California. **ROLLIE TOPPING** continues at Phoenix, **HARRY DESSAIN** will continue to serve the state of Texas from his office in Houston and **JOE BLAKE** remains in home base at Los Angeles. . . . **H. T. SCORDAS** of Union Bag-Camp at Savannah, was chairman recently of the TAPPI Corrugated Containers Conference which held forth in St. Louis. . . .

STRICTLY PERSONAL

The Natchez I. P. mill and community monthly magazine, suffered a shocking tragedy last month. Editor of the mill paper, youthful **GEORGE LUDLUM**, killed himself accidently when his shotgun went off as he loaded it in preparation for a hunting trip. He had been editor since April, 1955. . . . **JACK STEWART SMITH**, onetime head instrument man at IP's Natchez mill, recently was transferred to Mobile where he is asst. to the power supt. and in charge of instrumentation.

RICHARD EGGLESTON, formerly of the sales management staff of McLaurin-Jones Co., is new asst. sales mgr. of The Crossett Co. . . . **H. DEAN WOLFE**, who holds a b.s. degree in I.E. from U. of Pittsburgh, recently was appointed district rep. for General Electric's Construction Materials Southwestern sales district. He makes New Orleans his home base. . . . **M. K. GRIGGS CO.**, Inc., of Houston, Tex., now represents **RUST ENGINEERING CO.** in Texas. Top men here are **MARK K. GRIGGS**, founder of the company and a Michigan State grad with 40 years experience in engineering and steel fabricating, **BURTON W. WALLIN**, vice pres., chem engineer of the Univ. of Louisiana, and **JAMES LYMAN**, 1948 graduate of Carnegie Tech.

Black-Clawson now has a full-fledged operation in the South with its new offices at 830 W. Peachtree St., Atlanta (right across the street from the Atlanta Biltmore.) Five engineers will operate out of this central office: **CHARLES WHITE** and **ED BAST**, of the paper machine div.; **AL MONTVILLE**, son of **DON MONTVILLE**, Shartle Bros. sales mgr. and **FRED JONES**, representing the Shartle Div.; and **RUEY SHETTER**, who will represent Shartle Bros. in jordan sales and service.

Six key men have been promoted at Gaylord Div. of Crown Zellerbach in Bogalusa, La. **J. J. GOSS**, onetime tech. dir., is now asst. to the gen. supt.; **J. E. SAPP** moves up to tech. dir.; **A. G. ROOT** becomes asst. works mgr; **H. L. KEATON**, chem engineer at Bogalusa, has been moved up to tech. asst. to the board mill supt.; **BOB McCRARY**, chem eng., becomes asst. tech. dir. and **KEN EASLEY**, has been promoted to chief ind. eng. in the cost div. . . . **DAVID HILLEY**, Columbus, Ga., native and graduate of Georgia Tech, has been appointed an industrial engineer in Olin Mathieson's paper div. at Ecusta. Formerly with Union Bag at Savannah, he will assist in setting up a standard cost system. . . . **BURFORD La TOUCHE, JR.**, has been appointed plant supt. of the Fibre Board Container Div. of Robert Gair, Inc., at Richmond, Va.

SVEN OSTBERG, engineer for Kamyr, Inc., who has been in the U. S. working in close connection with International Paper Co.'s Camden, Ark., mill on preliminary engineering as well as on the final start up of the Kamyr continuous cooking unit at that mill, has returned to Sweden with his family because of illness. . . . **WALTER MILLHOUSE**, Cameron Machine Co. rep in Tuscaloosa, Ala., died August 17.

CURTIS E. (CURT) GREEN, district sales engineer in Atlanta for Link-Belt these past 12 years, has joined J. E. Sirrine Co., consulting engineers, at Greenville, S. C., to head the new Materials Handling Dept. of the company . . . **FRED H. FREULER** has been promoted to research associate at West Virginia Pulp and Paper Co.'s Covington, Va., Research Center. He has been on the New York staff as sponsor engineer for paper mills for the past two years . . . **JOHN P. SEROYER** has been named manager of Cameron & Barkley Co. **VELL, JR.**, has been appointed sales rep at C&B's Tampa branch, replacing **PERCY L. MOORE**, who was promoted to manager of the Orlando branch.

Ecusta Paper Co. is proud of its golf

BURDENED *with Dryer Felt problems?*

Brandon Sales can help you quickly

Avoid the worry and expense of needless downtime! Brandon's experienced staff gives you quick service, no matter when you need it.

Whether you need new felts . . . or services such as prestretching, and clipper seams . . . call your Brandon Sales representative. Brandon Makes All Three—Asbestos, Semi-Asbestos, Cotton.

For immediate attention to your dryer felt problems, write:

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Drawer L, Branwood Station
Greenville, South Carolina

Representatives:
Northern and New England States
Orton Corporation, Fitchburg, Mass.
Midwestern States
Frank Clawson, Kalamazoo, Mich.
West Coast
M. J. Maguire, Portland, Oregon
Southern States
R. S. (Bob) Davis, Greenville, S.C.

BRANDON DRYER FELTS

Will "Cover" South

RICHARD C. "TOOK" PLUMLEE (left), who recently joined H. Waterbury & Sons Co's. sales staff, has been assigned to expanded Southern sales territory. He will cover Southeast, including Virginia, North Carolina, Tennessee, Georgia and East Florida. He is '53 grad of Georgia Tech with a b.s. in industrial management and will headquarter in Atlanta.

CLARENCE C. BROWN (right), who has served as Southern Representative for Waterbury for past 10 years, will cover Southwestern area including West Florida, Alabama, Mississippi, Louisiana, Arkansas, Texas and Oklahoma. He will headquarter in Mobile area.

team, which snared top honors in the North Carolina Industrial Golf Tournament. Team members **GEORGE SEXTON, PETE WRIGHT, ROY ORR** and **WAYNE BRADBURN** posted a low score of 65 to snare the trophy. Individual honors went to **FRITZ MERRELL**, who won the director's trophy, and **JOE WOOD** of Chatham who won individual low score cup . . . **MRS. MILDRED W. WARNER**, President of Gulf States Paper Corp., was recently awarded an honorary Doctor of Laws degree by the University of Ala.

JACK PITTMAN, sales engineer for Ohio Knife in the Southwest, has recovered from a long illness and is now back calling on the mills.

Midwest Medley

AUSTIN P. STORY, president and general manager, the Chillicothe Paper Co., Chillicothe, O., enjoyed retracing his steps as a young man in World War I on a recent trip abroad. He visited Western Front fighting areas where he served as an army captain. . . . **FRANK B. EILERS**, who represents Eastwood-Neally Corp. wires and Orr felts in the Midwest, and his wife Helen are "at home" in their new residence in Kalamazoo—3913 Lakeside Drive. . . .

HAROLD L. FIELD is newly named assistant technical director for fiber research at Allied Paper Mills, Kalamazoo. He came from Deerfield Glassine Co. . . . **WILLIAM H. STONE** is supervisor of Midwest starch sales for National Starch Products, based in Chicago. He moved from New York. . . . **GUNNAR**

H & S Herringbone Gears

All H & S Sykes type, continuous tooth herringbone gears are made with extra heavy rims, arms and hubs. This provides reserve strength and dimensional stability. Greater face width, accuracy of generating and dimensional correctness assure increased load carrying capacity.

Made with a 30° helix angle, these gears provide smooth, quiet operation. There is no axial thrust. Several teeth are always in contact.

H & S herringbone gears are available in sizes up to a 60" pitch diameter with a D.P. of 2. They can be furnished in any modern gear material.

Our years of experience engineering and manufacturing all types of gears is available to help you select the best gearing for your application. Just send us the details or call. There is no obligation.

Send note on Company Letterhead for complete H & S Catalog.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 Hamilton Avenue
Cleveland 14, Ohio

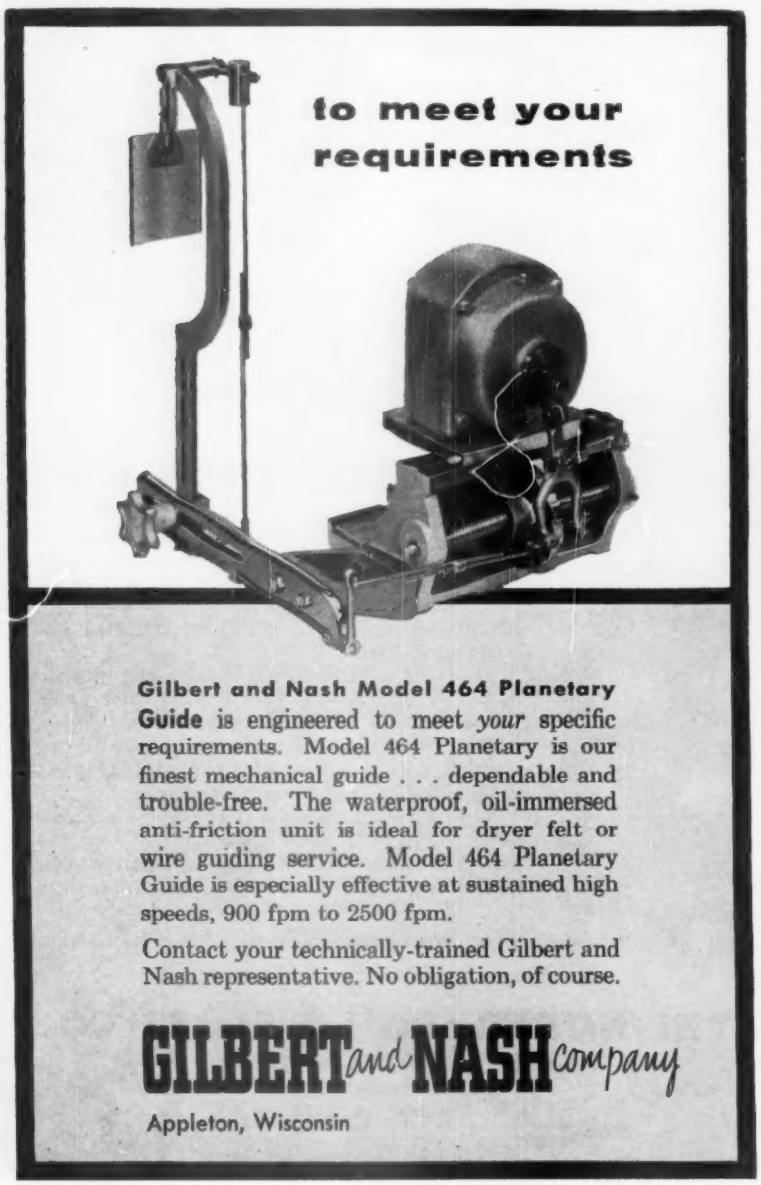
PULP & PAPER

STRICTLY PERSONAL

TALLGREN, formerly on the staff at Rhinelander Paper Co., has joined Bjorksten Laboratories, Madison, Wis. . . . **PETER WRIST** has joined the research dept., The Mead Corp., Chillicothe, O. He was with Quebec North Shore Paper Co. . . .

Old friends of **EARL (MICKEY) McCOURT,** veteran Consolidated Water Power & Paper Co. executive who now heads board and byproducts sales, were remembering him on his birthday, Nov. 14. . . .

JAMES H. DAVIDSON, chief engineer for Minnesota & Ontario Paper Co., renewed family and old friends' contacts when he was in New England for the Engineering Conference. He visited his alma mater, U. of Maine, and both his parents and a sister, living at Guilford, Me. Mrs. Davidson was with him. . . . **HARRY R. COOK,** who has been plant engineer at St. Regis Paper Co. for the past year at Sartell, Minn., accompanied **MALCOLM J. WRIGHT,** who is manager at Sartell, to the Boston Engineering meeting. Mr. Wright had recently made a trip to Montana. . . .



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Contact your technically-trained Gilbert and Nash representative. No obligation, of course.

GILBERT and NASH company

Appleton, Wisconsin

OWEN E. LYONS, adv. mgr., Marathon Corp., addressed a luncheon meeting of the Southwestern Paper Trades association convention at Fort Worth, Tex. . . . **DEAN F. BRAUN,** formerly of Pennsylvania Industrial Chemical Corp.'s Chicago sales staff, is in charge of their new sales office in Minneapolis. . . . **L. F. DEMARAIS** has been promoted to Detroit areas sales rep., **G. M. WATT** to office manager, Detroit, and **W. C. BOWER** to sales service mgr., home office, for Truscon Laboratories, a division of Devoe & Reynolds Co., Louisville, Ky., manufacturers and distributors of paints and anti-corrosive protective coatings. . .

JOE SHOUVLIN, president of The Bauer Bros. Co., Springfield, O., attended the Republican Convention in San Francisco and while he was out West he underwent an emergency appendectomy in Portland, Ore. We are happy to report he is now doing fine. . . .

W. H. CLIFFORD, corporation vice president, Kimberly-Clark Corp., recently presented the village of Kimberly, Wis., a 30-acre tract of land known as Sunset Point for park and recreational purposes. . . . **ANDY CARNEGIE** has been named production foreman of Ohio Boxboard's Pittsburgh plant and **KEN MONTGOMERY** has been promoted to corrugator foreman at the Rittman plant. . . . **JOHN C. RITCHIE** has been appointed an engineering dept. estimator and expeditor for Consolidated Water Power and Paper Co. He had been storekeeper for Conso-weld Corp., a Consolidated

G. W. Mead II Succeeds Richmond

HOWARD B. RICHMOND (left) is retiring as Production Manager, Wisconsin Rapids Div., Consolidated Water Power & Paper Co., announces C. E. JACKSON, Manager of the Division and Production Manager of Book Mills. Mr. Richmond, who is convalescing at his home in "The Rapids," will continue in the employ of the company on a consulting basis. He joined Consolidated in 1929 at Appleton, Wis.

GEORGE W. MEAD II, (right), Assistant Production Manager, Wisconsin Rapids Division, will succeed Mr. Richmond. Mr. Mead has been Asst. Production Manager at "The Rapids" since June 1955. A graduate of Yale, he received an MS degree at Institute of Paper Chemistry in 1952. He joined Consolidated that year as Wisconsin Rapids Div. Sulfite Mill Chemist and later served as Chief of Pulping Group and Director of Product Development.

subsidiary. . . . **LAWRENCE O. KANE** has joined Ahdawagam Div. in the same firm as a package design engineer. He had been with Marathon Corp. . . .

GUY COMPTON who recently retired as gen. foreman of maintenance and sheet metal, Champion Paper & Fibre Co., Ohio Div., and his wife Laura celebrated their golden wedding anniversary. Back in 1904 Guy's father, Bruce, came to Champion and it looks like there'll always be a Compton at Champion as Guy's son **BOB** is there as a grade inspector and Bob's son, **BILL,** is working in the electric shop. . . . **ELLWORTH H. SHRIVER,** The Mead Corp., Chillicothe, O., and chairman of the Ohio Section TAPPI, headed its recent meeting at the Manchester Hotel, Middleton, O. . . .

JOHN R. KIMBERLY, president and chairman, Kimberly-Clark Corp., has been elected a board member of the National Industrial Conference Board for a term of one year. . . . **ROBERT D. JAMES** has been appointed general sales manager of American Box Board's Filer City Div., and **JOHN A. OAKES** was appointed sales manager for its corrugating medium production according to **GORDON B. BONFIELD,** vice president.

Peter J. Massey, Machine Coating Process Pioneer, Dies

Peter J. Massey, 73, of River Forest, Ill., pioneer of high speed on-machine coating, died recently at Mayo Clinic in Rochester, Minn. He made an extensive tour of Europe in the past year. His widow, Elizabeth, and four sons survive. His estate was estimated at $600,000.

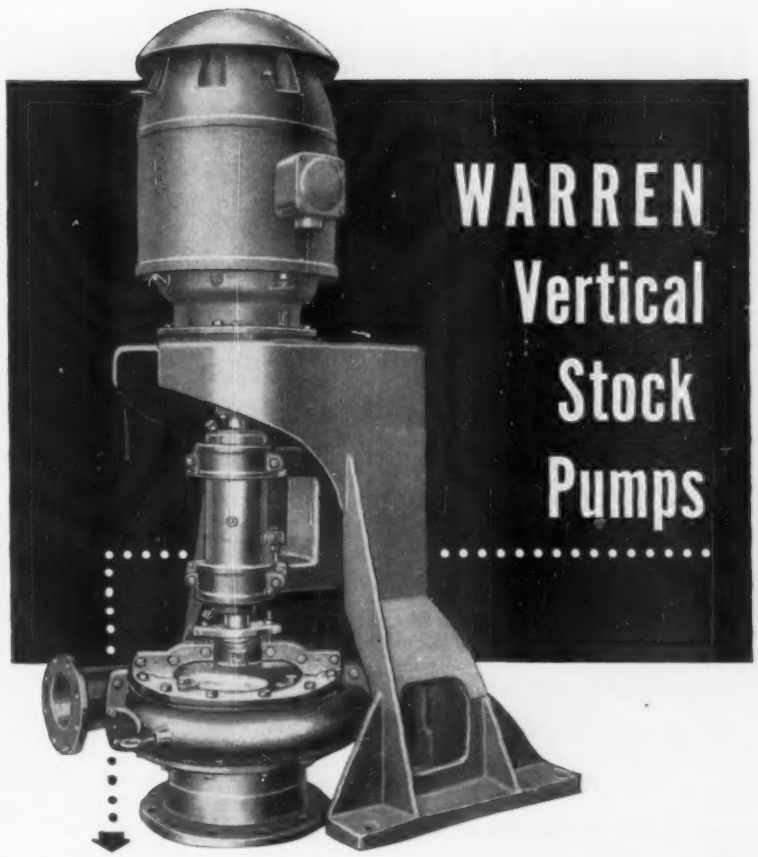
Back in the early 1930's when the rapid build-up of circulation of the so-called "slick" magazines was just beginning, Mr. Massey endeavored to interest several mills in his new on-machine coating process, Finally, George W. Mead, then president of Consolidated Water Power & Paper Co., now retired, envisaged the rapidly increasing demand for coated paper to meet needs of high speed presses, and he introduced the Massey process at Wisconsin Rapids, Wis.

Mr. Massey was general mgr. of the St. Regis mill at Kalamazoo (now leased to Alied Paper Mills) from 1946-8, he was vice pres. and general mgr. of H. P. Smith Co., Chicago, from 1940-6, and held a similar post with Combined Locks Paper Co. for the preceding six years.

Who's Who— Marathon Managers

If you want to catch up on who's who in production management at Marathon plants and mills, the place to do it was at Marathon Corp.'s recent 1957 production planning meeting in Neenah, Wis., chairmanned by **ROY J. SUND,** executive v.p. for manufacturing.

Managers of Wisconsin plants attend-



are recommended for certain difficult applications involving the handling of heavy or highly aerated stock requiring close proximity of pump to supply tank; also where limited space is an important factor.

The Warren Type SODV illustrated is one of four Vertical Stock Pumps built for a prominent mid-western mill, and handles 3% to 6% stock. There are three other basic designs available with several different sizes in each, for both submerged and dry-pit operation.

The same engineering features and dependable construction which has resulted in such a favorable "experience rating" on Warren Horizontal Stock Pumps, will be found in our Vertical types as well.

For instance, inevitable wear increases clearance between impeller and suction liner, reducing capacity, head and efficiency. An adjustment screw provides for reducing this clearance, which results in much less frequent replacement of liners. Also, a wide variety of experience-engineered impellers are available, with many standardized to fit the same type and size of pump.

HORIZONTAL or VERTICAL, it will pay you to specify:

WARREN QUIMBY PUMPS

Ask for SOD Bulletins

PP-11

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.

Warren, Massachusetts

ing the conference were **JACK L. STANIAK,** Menasha flexible packaging No. 1; **LES H. SEBORA,** Menasha flexible packaging No. 2; **RALPH E. RISLEY,** Menasha food package; **JOHN W. FITZPATRICK,** Neenah; **LARRY S. SABATKE,** Ashland; **JOHN E. GOODE,** Green Bay; **CHARLEY L. WAGNER,** Rothschild; **OSCAR O. EGGEBRECHT,** Wausau; **RICHARD A. MATHEWS,** Menasha ink, and **ARCH DIXON,** Neenah graphic arts.

Outlying plant managers present were **NORM H. FOLEY,** Menominee, Mich.; **JOHN W. REIMER,** Modesto, Calif.; **DON C. RAWSON,** Oswego, N. Y.; **FRED (DOUG) TRISH,** Sunnyside, Wash., and **RON A. WESTGATE,** Newnan, Ga. Also attending were **CLAUDE STEEVES,** general supt. of the company's pulp mill at Marathon, Ont., and **JOHN E. SPALDING,** who has been named manager of the pulp, paper and paperboard mill Marathon is building at Naheola, Ala.

Manufacturing staff programs were outlined by **ED E. DENDOOVEN,** general production manager; **JOHN W. BARD,** pulp and paper mills production manager; **LEE C. HEROMAN,** board converting plants production manager; **HAROLD C. SPERKA,** graphic arts plants production manager, and **GEORGE WACHTER,** assistant chief engineer.

Pacific Patter

Travel notes from Louis H. Blackerby, P&P's editor based in Portland, Ore.:

ALVIN TUTEN, general supt. of Potlatch Forest, Lewiston, made an angling reputation during a recent week-end by catching a two-day limit of salmon while on an off-shore trip at Oregon's Depot Bay . . . **ROBERT SMYTHE,** of Ray Smythe Co., Portland, Ore., back from a trip to New England and New York, generated interest among industry personnel by showing slow-motion pictures of different types of Carthage chippers and Carthage's new slab barker to FPRS members at Lewiston, Ida. . . .

JAMES W. McCOURT, technical supervisor of CZ Camas mill, has been promoted to technical assistant to the paper mill supt. (wrapping) and is succeeded as head of technical department by **C. W. DAVIDSON,** formerly assistant supervisor . . . **SAM RUNYAN,** formerly retirement plan administrator, advanced to assistant men's personnel supervisor at CZ Camas, as successor to **VERNE ANDERSON** who transferred to Portland, Ore., as Crown's office and personnel supervisor there. . . .

TWO CROWN Z MILLS HONOR 361 EMPLOYES for service ranging 5 to 45 years. Top—Camas Div.: (l to r) Kraft Mill Supt. L. D. MCGLOTHLIN receives congratulations and 30-year pin from R. T. KIMBERLIN, CZ's Vice Pres. of Corporate Development; Res. Mgr. F. O. BOYLON, who welcomed recipients to the pin dinner, assists with the presentation. Bottom—West Linn Div.: CZ Director TRUMAN W. COLLINS (right) awarding 30-year pin to JOHN V. VENABLES, Asst. to Paper Mill Supt.; CHARLES E. ACKLEY, Paper Mill Supt., introduces award recipients of his department.

HARRY THURLOW, who is now based in New York for Rayonier Inc., has a neat way of keeping in touch with his friends in the Pacific Northwest through his wife, **SALLY.** Her recipe for lasagne was brought back by Mrs. **FRED RADKE,** whose husband is asst. sulfite supt. at Rayonier, Port Angeles, Wash., when she visited the Thurlows in New York on her way to the White House conference on Education, and the recipe made a column in the local newspaper. . . . **WILLIAM D. WELCH,** former public relations director for Crown Zellerbach, has been invited to conduct a question-and-answer session of Yale University's School of Forestry seminar. . .

MORRIS ROSEN, founder and senior partner of Alaskan Copper Works and Alaskan Copper & Brass Co., Seattle, died recently at the age of 75. He immigrated from Latvia while still in his youth and in 1913 set up a coppersmith shop in Seattle. The two copper firms grew out of this shop into major suppliers of stainless steel and non-ferrous metals used in the pulp and paper industry. His sons, **WILLIAM,** and **KERMIT,** are managing the businesses. . . .

CONRAD SPEIDEL, formerly in public relations for Weyerhaeuser and later Kaiser, has joined Crown Zellerbach in

Greater Production of Higher Quality Pulp

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- *at Lower Cost*

This is the end result of the various processes and equipment which we have installed in pulp mills throughout North America. Send us details of your requirements.

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San Francisco as assistant to director of public relations, **CHARLES ALLEN.** Also in CZ p.r. dept. is **RON RICHARDSON,** who moved recently to Portland, Ore., to head up Northwest activities.

Paul Fortier Dies

Like many another papermaker who got his start at a very early age in New England paper mills, the late Louis Paul Fortier literally worked his way across the country in paper mills. At the age of 66, Mr. Fortier died Sept. 25 at Everett, Wash., where he had been general supt. at the Simpson Paper Co. (formerly Everett P.&.P. Co.) for 19 years. At age 12, he started in with Orono Pulp & Paper Co. Basin Mills, in Maine. By 1912 he was assistant supt. at Eastern Corp. at South Brewer, Me., and in 1916 he held a similar position at American Writing Paper Corp., Holyoke, Mass. After a stint in the infantry during World War I, he became supt. at Groveton (N.H.) Paper Co. In the '20's and '30's he superintended papermaking in Michigan at Bryant Paper and Michigan Paper, and in 1936 moved to Everett. He had retired last spring.

Notes from Northeast

From Eastern Editor Maury Castagne's little black book:

JOHN H. RICH, Riegel Paper Corp., Milford, N. J. is new chairman of the Penjerdel division, the American P&P Mill Supts. Assn. **ED OLMSTEAD,** newly elected president of Eaton-Dikeman Co., Mount Holly Springs, Pa., is first vice chairman; **JOHN J. VERWAYEN,** Gibraltar Corrugated Paper Co., Inc., North Bergen, N. J., is 2nd vice chairman; **WILLIAM M. SHANE,** National Vulcanized Fibre Co., Yorklyn, Dela., is 3rd vice chairman and **STANLEY B. HUSS,** F. C. Huyck & Sons, Haverton, Pa., was re-elected secretary treasurer. Incidentally, Penjerdel will hold its 1957 Spring Meeting at Hotel Stacy-Trent, Trenton, N. J. on May 10-11. . . .

JOHN G. ALBERT, general traffic manager, West Virginia Pulp and Paper Co., is now chairman of the National Paperboard Assn. Traffic Committee. . . . **DUNCAN WHYTE, JR.,** vice president, Berlin & Jones Co., Inc., is chairman of the Envelope Mfrs. Div. of the 51st Annual Fund drive of the Travelers Aid Soc. of New York. . . . **HAROLD DUFFY,** traffic manager, New York and Pennsylvania Co., Inc., is vice president of the Pulp and Paper Traffic League. . . . **QUENTIN C. WEAVER,** formerly brand coordinator for wax paper in Scott Paper Co.'s staff technical service dept. has been named production manager at its Hoboken, N. J. mill. **ROBERT C. MORROW,** staff administrative and technical assistant on the staff of the vice president in charge of manufacturing,

Tomorrow's
MODERN DESIGN
for
Today's Demands!
MORRIS PUMPS
keep the aluminum industry rolling toward
GREATER CAPACITY
In pace with the far-sighted aluminum industry, other leading manufacturers the country over shrewdly specify Morris for heavy duty pumping.
The Morris Type RX Slurry Pump is rugged, dependable, and trouble free. It's specifically designed for heavy pumping; gives peak performance under all conditions, including heavy, coarse or fine slurries, dispersions and sludges.
The Morris pump operates with minimum attention . . . lowers maintenance costs . . . can be quickly dismantled for inspection . . . avoids lengthy lay-up time. For heavy duty pumping . . . specify Morris.
WRITE TO MORRIS TODAY for recommendations of the pump best suited to your size, capacity, specifications. Ask for Bulletin 185.
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Sales Offices in Principal Cities

PULP & PAPER

STRICTLY PERSONAL

NEW GLATFELTER OFFICERS (l to r): J. RUSSELL HOKE, Vice Pres. and Treas.; A. J. "ANDY" LUETTGEN, Vice Pres. and Gen. Mgr., and L. MYERS, Secy. and Asst. Treas.

replaces Mr. Weaver. . . .

RUSSELL H. PENTECOST, instrument engineer, meter dept. of technical service at Oxford Paper Co., Rumford, Maine, has been promoted to superintendent of the meter dept. He has a b.s. in chemical eng. from Worcester Polytechnic Institute. . . . **BERNARD M. DOYEN,** in Oxford's wood room, recently won a 1956 Chevrolet station wagon in True magazine's national contest. He took second prize among 400,000 entries. . . . Incidentally, citizens of Greater Rumford honored **HUGH J. CHISHOLM,** chairman of the board of Oxford, with a day in his honor and a 700-attendance dinner. . . .

RADCLIFFE P. CHEESMAN is now manager-product service for General Electric's Small Steam Turbine Dept. at Fitchburg, Mass. . . . **BURLEIGH BARKER,** assistant controller, Keyes Fibre Co., won first prize ($50.) for a company sponsored contest to select a trade name for its new line of cellophane packaged plates. Suggestion: Sava-Maid. . . . **LAURENCE H. BROWN,** formerly with St. Regis Paper Co., is now a service engineer with Albany Felt. Co., Albany, N. Y. . . .

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Industrial floors last longer!
Steel wheels roll on steel with...

KLEMP HEXTEEL
Steel Surface Armor

STRONG!
DURABLE!
TOUGH!
PERMANENT!

Prevents cracks, ruts, pot holes, spalling, surface wear and other costly damages!

Ideal for all industrial surfaces subject to powerized hand trucks and other steel-wheeled vehicles.

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Install Klemp Hexteel in new concrete floors which will be subjected to extremely rough usage. Resurface wood and concrete floors and other industrial surfaces in need of repair with Klemp Hexteel. Fill with concrete, mastic, hot or cold asphalt or magnasite—depending on the nature of the installation.

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LAMAR T. ATWOOD, recently with Hammond Bag & Paper Co., has joined Hudson Pulp & Paper Co., as engineer at their North Windham, Maine mill. . . . **J. SHARTLE BROOKOVER,** formerly with Valley Board Corp. is now production manager at Federal Paper Board Co., Inc., at New Haven, Conn. . . . Up the ladder at Great Northern. In addition to last month's note on **J. H. "PETE" HEUER** to assistant manager of manufacturing, are **ROBERT E. CROSSLEY** to chief electrical engineer; **WARREN F. DANIELL,** to manager of engineering and research dept.; **CHARLES E. DURKEE** now pulp mills supt., **OMA J. LOMBARD** is assistant master mechanic and **JAMES O. STARKWEATHER** moves up to chief engineer. . . .

EARL DONLEY, of Babcock & Wilcox Co., New York, and his wife, Elizabeth, are doing commuting these days, when they can, to Rochester, N. Y. Reason: They have become grandparents. . . . **JOHN KNEELAND** is now sales manager, paper and chemicals division, Dexter Chemical Corp., New York, N. Y. He was with Arnold, Hoffman & Co., Inc. . . . **EARL P. McGINN,** formerly with Sandoz Chemical Works, Inc., is now mill manager of Taggart Paper Mills, Watertown, N. Y. **SHERIDAN J. McNAMARA** has joined West Virginia Pulp and Paper Co. as research assistant at Luke, Md. . .

THEODORE B. RUSSELL is now general manager of the West Jersey Paper Mfg. Co. at Camden, N. J. . . . **CARL V. SIMMONS** is new plant engineer for International Paper Co., Palmer, N. Y. . . . **ROBERT A. SLOMAN,** has left Doeskin Products, Inc. to join Sandy Hill Iron & Brass Works as project engineer.

EDWIN G. VAUPEL, former mgr. of foreign accounting and assistant mgr. of foreign mfg. with the American Chicle Co., has joined Brown Co., Berlin, N. H. as assistant manager of costs. **ROBERT F. S. YOUNG,** a '49 Syracuse U. grad, becomes an industrial engineer. . . . **ISADORE BOILARD,** a Brown employe since 1924, has been promoted to supt., finishing room at Cascade mill. He started out as a broke hustler. . . . **LEANDRE COTE** has been elected assistant treasurer of Granite State Veneer, Inc., Plywood Products, Inc., and the Stratford Realty Corp. of North Stratford, N. H., announces President **A. E. HAROLD FAIR.** . . . **VICTOR BRUNO** has been named assistant to the general manager at the three companies.

MELVIN L. KEMP has retired after many years at Rising Paper Co., Housatonic, Mass., the last 8 as gen. supt. Mr. Kemp made many mechanical and technical contributions to the fine paper industry. His first position was at L. L. Brown mill, later with Strathmore, Rising, Hurlbut, Keith, coming back to Rising in 1945.

NEW CONCEPT NEEDED

"Forests cannot be brought to their full potential as long as forest operations are governed by legislation, taxation and regulations that are out of date. Virtually all these were designed to meet the old-fashioned concept of forest liquidation rather than forest management."—**A. C. PRICE,** president, Price Bros. & Co., Quebec City.

NO SLUMP

"From present indications, we are expecting continued strong demand for the first half of 1957 with prices to remain stable."—**JOHN E. ALEXANDER,** president and general manager, Nekoosa-Edwards Paper Co.

NEEDS FOR SCIENTISTS GROW

"It would seem to me to be a relatively safe prediction that in 20 years —barring a world catastrophe—we will need twice as large a fraction of our working force engaged in science, engineering, and medicine as we have today. Maybe it will be 30 years. The task will be a gigantic one. We had better explore the possibilities."—**DR. LEE A. DuBRIDGE,** California Institute of Technology.

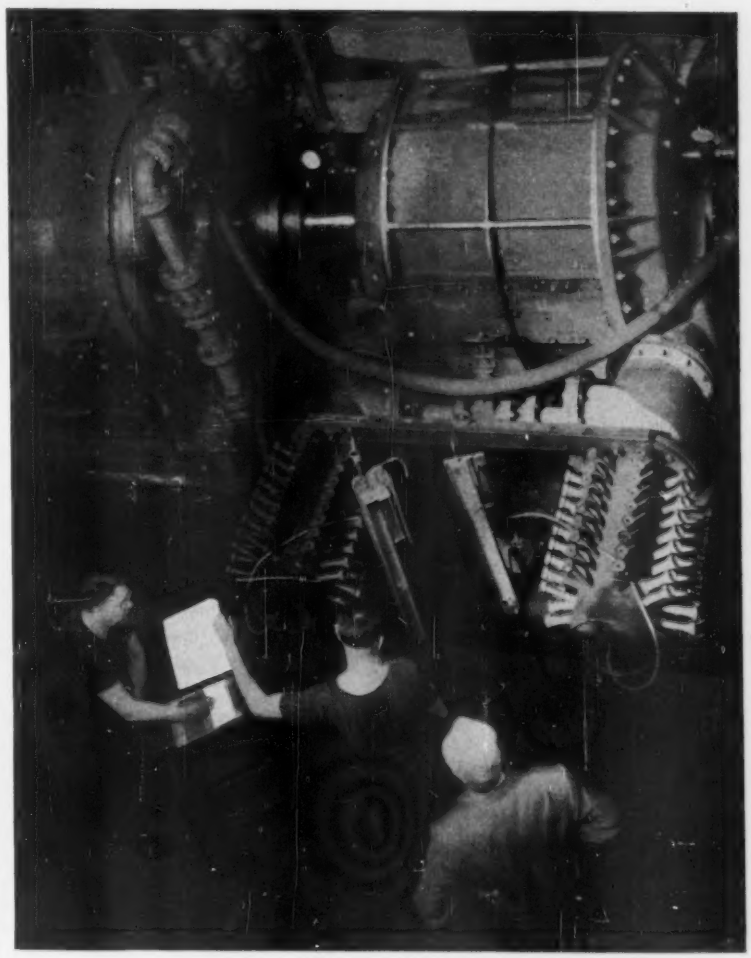
PAPER MAY LEAD ECONOMY

"I cannot bring myself to believe that there is any danger of another deep depression. Basic industries will continue strong and healthy. In fact, it would not surprise me in the least to find that of all the basic industries, the paper industry made more progress than the whole economy in the next decade."—**D. W. AMBRIDGE,** president, Abitibi Power & Paper Co.

SELF SALES TREND LINKED TO PACKAGE

"A large portion of American business today rises or falls on the ability of the package to translate advertising into action at the point of sale. Once the housewife makes her decision, that's IT. If she picks your carton off the display shelf, you're in business. But if she passes it by, you're through —the point of purchase can also be the point of no return."—**GUSTAV L. NORDSTROM,** executive director, Folding Paper Box Assn.

Rated performance of every Nash Vacuum Pump is assured by this precise laboratory test



Rated capacities of Nash Vacuum Pumps are not theoretical. Every Nash Pump is tested individually. Air capacity is determined by delivery thru accurately machined and calibrated orifices. Related vacuum is measured by precise mercury column, and horse power is recorded electro-dynamically. Records of these tests are retained by us, and certified copies are available to Nash Pump owners.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY

440 WILSON ROAD, SO. NORWALK, CONN.

PULP & PAPER

NEW INDUSTRY SERVICES

A NEW SOUTHERN PLANT has been opened by Stein Hall & Co. at Charlotte, N.C. The $250,000 plant on a 10-acre site on Glenwod Drive will manufacture resins and liquid adhesives.

DRYER SECTION DESIGNING is featured by Sandy Hill Iron and Brass Works in a new brochure. Allen A. Lowe, sales promotion manager, says superior methods of testing and quality control have been adopted and permanent records are kept of physical tests and chemical content of every dryer and dryer head cost. Static balancing assures longer bearing and gear life and better all-around performance, he says. Ask Mr. Lowe for your copy. He's at Hudson Falls, N.Y.

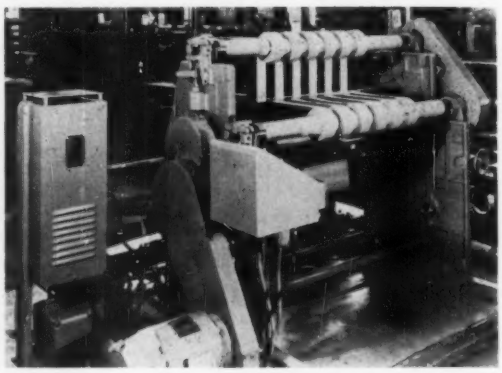
OLIVITE ACID HANDLING PUMP, designed for utility and durability, combines simplicity and efficiency of a high-grade centrifugal water pump with corrosion-resistant properties of a durable chemical pump. It is detailed in Dorr-Oliver's bulletin No. 5004. Features: corrosion-resistant construction of internally-wetted parts; casting and cover lined with Olivite, a special rubber base composition for high tensile strength and bonded to the casting and cover. The impeller is designed for high pumping efficiency. Ask for your copy from Dorr-Oliver, Inc. at Stamford, Conn.

CAUSTIC SODA ENGINEERING AND HANDLING GUIDE for safe handling and storage of liquid caustic soda is being offered by Hooker Electrochemical Co. Features: diagrams and photographs of tank cars, piping and storage equipment; recommendations for unloading, dilution, transfer and storage; materials of construction; safety precautions and first aid treatment; graphs, charts and tables covering physical data on liquid caustic soda. Write for your copy to Hooker at Box 344, Niagara Falls, N.Y.

EXPANDED FACILITIES to the tune of $500,000 are being constructed by Wisconsin Wire Works, Appleton, Wis., due to increased demand for their Perfect Surface Fourdrinier Wires.

SOLIDS CONTACT REACTORS are featured by Cochrane Corp. in a bulletin which discusses theory and problems of cold water clarification as well as advantages of various designs. Plan and elevation drawings show a wide variety of designs available. Ask Cochrane Corp. for Bulletin 5001. They're at 17th St., below Allegheny Ave., Philadelphia 32, Penna.

INTRODUCING NEW WINDER. Cameron Machine Co. has designed this new winder No. 500, to meet need for low cost center machine to handle variety of materials including plastic films, foils, paper, textiles and laminates. Can be equipped with either razor-cut, score-cut, shear-cut or burst-cut slitting elements; built in widths from 32-in. to 62-in.; rewind capacity of 15-in. dia.; speeds up to 500 fpm and centralized controls.



STATIC SPEED REGULATING CONTROL SYSTEM for paper machines has been developed by General Electric Co. Reportedly the first of its type for use in the paper industry, according to GE, it has completely eliminated electronic tubes in the regulator. Instead, it has a ruggedly-constructed transistor unit and employs amplistats to provide static excitation. GE engineers say the system's uniform adjustable rate of acceleration and deceleration makes it possible for them to tailor the control to the inertia of individual sections so that the drive will reach papermaking speed in minimum time.

FLOATING ROLL GUIDES and how they will increase the efficiency of your guiding operations, do a better job of guiding without marring selvage, are featured by Mt. Hope Machinery Co. in a circular. Other features: square edges with a ±0.15-in.; elimination of wasteful seconds. With it, says William M. Gallahue, general sales manager, you can increase profitable production in any guiding operation.

BAUER PROCESSING EQUIPMENT is reviewed for PULP & PAPER readers in Bulletin No. 56, of the Bauer Bros. Co. Features: Chip digester, stock refiners and Centri-Cleaners for pulp, paper and board mills; magnetic separators. Also available is a new bulletin No. P-13-B on "Pulp-Through" refiners. Features: high capacity, excellent pulp quality, low power consumption, minimum operating and maintenance expense. Keep up-to-date by asking for both bulletins from Bauer Bros. Co., 1706 Sheridan Ave., Springfield, O.

PANALARM ANNUNCIATOR SYSTEMS are described fully by Panalarm Div. of Panellit, Inc., Skokie, Ill. Fourteen sections tell the complete story: operating sequences, enclosures, mechanical spcs, technical data and performance features. Ask for Catalog 100B from Panalarm at 7401 North Hamlin Ave., Skokie, Ill.

PRICE REDUCTIONS ON PVC AND FITTINGS up to 15% have been announced by Carpenter Steel Co. New price structure, says W. R. Staples, manager of sales, is the first that is based on realistic pricing procedure used for many years by the steel industry. Carpenter set it up because it believes that "PVC has found its rightful place as a corrosion-resisting piping material throughout the industry."

CARL W. GRAM JR. has been named vice president in charge of sales for Mason-Neilan Division of Worthington Corp., Norwood, Mass. He will continue to headquarter at 100 Park Ave., New York City.

WALWORTH AND GROVE—that's the new combination as a result of Walworth's acquisition of capital stock of Grove Valve & Regulator Co. and Grove Controls, Inc., both of Oakland, Calif. This is Walworth's fifth acquisition in two years.

DEPENDABLE CONSTANT SPEED, simplicity of operations and low first cost are atrtibuted by Alis-Chalmers to its "Synduction" motor, a synchronous motor. Expected to have many uses in pulp and paper. It is featured in bulletin 51B8440A, available on request. Write Allis-Chalmers, 995 So. 70th St., Milwaukee, Wis.

WELDING FITTINGS AND FLANGES of various types and sizes are described in a new folder by Tubular Products Div. (fittings dept.) of Babcock & Wilcox Co., Beaver Falls, Pa. Bulletin FB-502 details B&W's line of carbon, alloy and stainless steel seamless welding fittings and forged steel flanges.

helping you is our aim

Getting more paper off the machines—without compromising quality— is the challenge facing many mill operating people today. It's a tough job, but your customers' growing requirements must somehow be met.

As we see it, helping mills operate at peak production should be a *regular* service from every good supplier. Teamwork is needed now more than ever before.

A working partner with the paper industry for many years, we offer our resources to help make your tough job a little easier . . . intelligent field representation—competent research facilities—experienced design service—modern felt-making machines—and the devoted skill of our craftsmen.

FATHER AND SON TEAM—*It takes more than our modern, precision machines to make felts you can depend on. It takes men and machines . . . craftsmen like Frank and Harold Drexler whose combined 75 years of felt-making experience and devoted skill pay off for you on the paper machine.*

Appleton felts

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APPLETON WOOLEN MILLS

a working partner with the paper industry

APPLETON, WISCONSIN

PULP & PAPER NEWS FROM CANADA

DESCRIBES RISE OF INDUSTRY IN QUEBEC REGION . . . T. F. Flahiff, vice president of Quebec North Shore Paper Co., speaking to more than 500 members of the Canadian Club, biggest group of businessmen in Montreal, said:

"There is no place in Canada which has added so much in so short a time to the national economy as the region east of the Saguenay River. There is no place in Canada which in the next 10 years will have so vital an effect in increasing the prosperity first of its own province and secondly of the nation at large."

Mr. Flahiff described the north shore for 700 miles east of the Saguenay, with a depth of about 100 miles inland from the St. Lawrence, and a total population of only 43,000 people, as "the kingdom of the Saguenay."

"Private industry has invested more than a billion dollars in this new region. It is continuing to do so at an almost fantastic rate," he asserted.

"Resources in this region promise to add more than 2 billion dollars a year to the productive wealth of Quebec. In 20 years, annual production of pulpwood should be 2 million cords. Iron and titanium ores should be mined at a rate of 25 million tons a year. Aluminum manufacturing may go to 300,000 tons. Hydroelectric energy produced should be not less than 3 million horsepower.

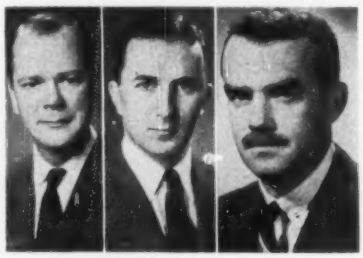
"The north shore's estimated production in 20 years will have a basic value of about 700 million dollars a year, and the value of what Quebec province will be able to produce annually from these basic products would be about 1 billion 800 millions," Mr. Flahiff said.

He said the north shore giant is still handicapped by the "clothes of a child" in transportation and communications services because the population is too small to make its voice heard.

RUSSIANS IN CANADA . . . A group of seven Russian timber officials headed by G. M. Orlov, who has been Russian minister of forest industries for the past ten years, toured Canada this fall and spent most of the time in British Columbia, visiting sawmills, logging camps and pulp mills. The tour was sponsored by Canadian forest industry groups, and marked a return courtesy for the journey several Canadian foresters made to Russia last summer.

The Russians were particularly impressed with the emphasis on mechanization in the woods and high efficiency of the new mills in British Columbia.

"We produce three times as much lumber as Canada, but only 2,000,000 tons of pulp a year, one fifth of Canada's output," admitted Mr. Orlov, who added that Russia's demands for pulp and paper exceeded her production and imports were necessary from the Scandinavian countries.



In Canadian Industry News

ALLEN PATTON (left) is now Sales Rep for Pulp Sales in Canada and abroad, Mead Pulp Sales, Inc. He rejoins Mead after 3½ years with Columbia Chemical & Cellulose Co., where he also served in sales. He was with Mead from 1945 until 1952, and for many years prior to the war with Fraser Cos.

G. D. LEWIS (middle), Secretary of Dominion Engineering Works, Montreal, has been transferred to the paper machinery division where he becomes Research Engineer—Products and Market Planning. He will be in contact with all phases of manufacturing in pulp and paper industry.

W. E. DUGGAN GRAY (right) has been appointed Director of Pulp Sales, Columbia Cellulose Co. He is a McGill graduate and in 1948 joined Consolidated Paper Sales. Joining Columbia in 1954, Mr. Gray has acted as Pulp Sales Representative. He will be located at 2035 Guy St., Montreal.

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This truly pivotal position with Ebasco Services Inc., one of the nation's recognized leaders in the engineering and construction fields, offers a challenging opportunity to a PAPER MILL ENGINEER with a background of solid achievement, seasoned judgment and administrative experience.

QUALIFICATIONS: Thorough familiarity with Kraft and Sulphite paper manufacturing processes. M.E. or Ch.E. degree. 10 or more years' experience. Ability to deal with principals.

Salary commensurate with experience. We invite your complete confidential inquiry. Send your resume to:

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PULP & PAPER Chemicals Column

Pulp and paper—3rd biggest consumer of chemicals

"It is a cellulose clothesline on which many chemicals are hung"

DRYING WATER-WASHED CLAY . . . An article in the fall issue of Huber News fully describes its Huber, Ga., plant, including its newest operation—spray drying water-washed clay. Filter cake is discharged into a mixing trough and a special chemical is introduced which converts the cake into a slurry. This is pumped to the dryer and sprayed through a nozzle in a heated chamber. The fine spray almost instantly forms fine pellets. The article is amply illustrated—shows crude clay moved to pugmills where it is given uniform viscosity, mixing with water, separating of impurities, grading for particle size in hydroseparators and, finally, bleaching, chemical treatment, filtering and drying.

NEW MONSANTO ASSIGNMENTS . . . Three changes in sales assignments in Monsanto Chemical's Organic Chemicals Div. have been announced.

A. David Evans, manager of resin materials sales, has been appointed St. Louis district sales manager for the division.

H. James Lawler, manager of paper chemicals sales, has been appointed manager of resin materials sales, succeeding Mr. Evans.

Lloyd L. Shand, assistant manager of paper chemicals sales, has been promoted to the managership of that department vacated by Mr. Lawler.

SCOTCHGARD SIZING . . . Minnesota Mining & Manufacturing Co. has developed a sizing for paper which, when applied to the surface, renders paper both water resistant and oil resistant. 3-M advises that it has no wet-strength properties and that papers treated with it repulp with about the same difficulty as paper hard sized with rosin.

POTATO STARCH . . . Three new plants are expected to increase potato starch production of American Key Products, Inc. by over 30%. American Key has been named exclusive distributors for a new plant at Riverhead, Long Island, N.Y., known as Philbrick Plant No. 3, which will have an operating season from July through March, dovetailing with Maine production for a 12-month production basis for the first time in the East.

American Key will also handle production of Philbrick plants Nos. 1 and 2 at Van Buren and Westfield, Me. These are in addition to four potato starch plants in Idaho and Washington, where 12-month production pattern exists.

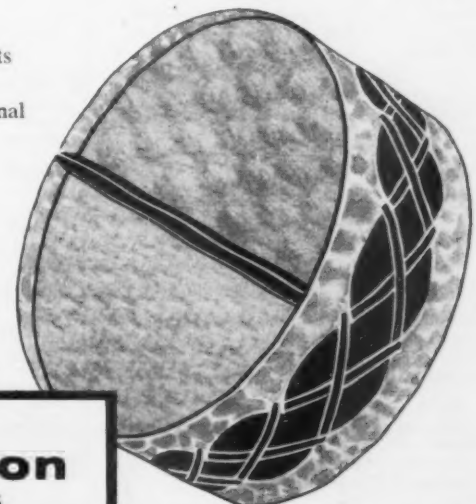
CLAY SUPPLIER TELLS PAPER QUALITY STORY . . . Minerals & Chemicals Corp. of America, miners and producers of Edgar clays, has started a series of ads in graphic arts publications addressed to its customers' customers, specifiers, buyers, distributors and users of finished paper. Executive Vice Pres. Al Blake says the purpose is to help keep paper consumption at all-time highs.

RESEARCH PROMOTIONS . . . American Potash & Chemical Corp., major salt cake supplier to mills, announces two promotions in the research department at its Trona, Calif., plant. Dr. Donald Garrett has been named as assisant manager of the department, while Stanley Cohen has been appointed head of the new products section.

You can't beat HAMILTON Felts

for longest, high quality performance

CHIEF among the many superiorities of Hamilton Felts are the longer periods of *High-Quality Performance.* This not only helps you by making greater operational savings in the removal of more water at the wet end of your machines and cooking out less at the dryers but in making savings by beating costly down time. If you can do all this and have less broke, too, isn't that what *you'd* like?



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Excellent opportunity for man with broad pulping and bleaching experience research department of nationally known integrated kraft pulp, paper, bag and container manufacturer. Salary open. Southern location in city of 65,000. Send complete resume. All replies strictly confidential. Write Box 278, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

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Leading manufacturer of PULP AND PAPER machinery in sales of pulp mill and stock preparation equipment, has opening for qualified engineer as representative in Southwestern states.

Good starting salary, excellent insurance and bonus arrangement.

Submit complete resume of experience education, and personal history.

Reply Box 281, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

CHEMIST WANTED

Experienced Kraft Pulp and Paperboard Chemist or Chemical Engineer for large eastern mill. Permanent position with expanding organization. Attractive vacation, hospitalization and retirement plans. Reply to Box 282, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

RESEARCH SUPERVISOR—PULPING & BLEACHING

We need a man to supervise our research projects in the fields of pulping and bleaching at our central research laboratory in International Falls, Minnesota. Applicants should have a degree or degrees in chemical engineering or chemistry with experience in this field. This opportunity is excellent for the man with good background and sincere interest in pulping research.

All replies will be kept confidential and should include personal data, educational, and work history together with salary thinking.

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We can place—Manager, also research and product development director for rag paper mills; pulp mill mgr.; supt. fast running Fourdrinier mach. board mill; asst. supts. for Fourdrinier and Cylinder mach. paper mills (2); controller and accountant.

Plant and project engineers, master mechanics, designers and draftsmen, $6,000—$15,000 year; chemists, time study-industrial engineers; asst. supt. finishing fine papers.

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Excellent opportunity for man experienced in unbleached Kraft board or paper sales, who has a sound knowledge of the industry and is ready to go places with a small progressive paper mill operation located in the Southwest.

Your reply will be treated in confidence and should include information about your experience, present position and compensation, home address and telephone number. Write Box 283, PULP & PAPER, 370 Lexington Ave., New York 17.

EXPERIENCED
PULP AND PAPER MILL
ELECTRICAL ENGINEER
WANTED

For new 100 ton pulp and paper mill now under construction in Central America. Excellent opportunity for retiring engineer. Top salary—U. S. tax exempt. Pleasant healthy living conditions near beautiful large beach resort and American colony.

Please submit record of training and experience. Also please be sure to state salary desired and include telephone number in first reply. All replies held in strict confidence.

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With up-to-date successful experience on high grade bond and book papers, for new one hundred ton mill now under construction. One hundred percent American equipment—special Rice-Barton fourdrinier paper machine.

Excellent opportunity for retiring top ranking paper maker. Salary U. S. tax exempt. Pleasant healthy living conditions near beautiful beach resort and American colony.

Please submit complete record of training, experience and achievement. Also please be sure to state salary desired and include telephone number in replying. All replies held in strict confidence. Write Box 285, PULP & PAPER, 370 Lexington Ave., New York, N. Y.

WANTED

Excellent opportunity for young man (30-40) with experience in cylinder machine operation, to train for position of Tour Boss in Midwest Boxboard Mill. All replies confidential. Write Box 286, PULP & PAPER, 370 Lexington, New York, N. Y.

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Due to our expansion program in the pulp, paper, and insulation industries, several excellent opportunities are available for individuals possessing degree in chemistry, chemical engineering and physics for permanent and responsible positions in our research laboratory located in the Upper Midwest. Salaries commensurate with background and experience.

Our employees know of these positions.

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PROCESS ENGINEER

Required by B. C. West Coast Mill. To be responsible to Mill Manager or Assistant to Mill Manager.

Will be expected to effect, through specific assignments, as well as individual initiative, process and quality improvements and cost reductions.

General qualifications are that he be a graduate engineer, preferably a chemical engineer, but not essential. Must be capable of progressing to a supervisory position. His preference and ambition should be directed towards an ultimate senior operating position.

It is desirable but not essential that applicant have previous pulp and paper experience. Must be personable, and get along well with people. Address applications to:

R. S. Stacey, Director of Administration
Columbia Cellulose Company, Limited
404 Royal Bank Building
675 West Hastings Street
Vancouver 2, B. C.

ASSISTANT PLANT ENGINEER

Required by West Coast B. C. Mill. To be responsible to Plant Engineer. Will be responsible for general administration of operating maintenance and preventive maintenance programs. Will be expected to bring about cost reductions and equipment improvements through application of engineering principles and design. He will be expected to initiate and effect specific projects and assist Plant Engineer as may be required.

Applicant must be graduate engineer with minimum of 5 years experience in industry, preferably, but not essentially, in pulp and paper. Must have had some actual supervisory experience and demonstrated ability to organize and administrate.

This requirement is immediate, and is a permanent position. Applicant should be capable of assuming the position of Plant Engineer eventually. Address applications to:

R. S. Stacey, Director of Administration
Columbia Cellulose Company, Limited
404 Royal Bank Building
675 West Hastings Street
Vancouver 2, B. C.

FUTURE LOOKS BRIGHT. Left to right: President EUGENE H. CLAPP, and Vice President AMOR HOLLINGSWORTH of Penobscot Chemical Fibre Co. put their heads together for launching of substantial pulp improvement program. Cost: $1,500,000. Features: New chlorine dioxide bleaching (Solvay) and 300 Bauer Centri-Cleaners for both sulfite and soda pulps. Photo by PULP & PAPER.

Penobscot Chemical Fibre To Have Chlorine Dioxide Plant

A substantial pulp improvement program is now underway at Penobscot Chemical Fibre Co., Great Works, Me., President Eugene H. Clapp disclosed to PULP & PAPER.

The entire program will reach expenditures of $1,500,000 and will include a chlorine dioxide generating plant using the Solvay process and pulp processing equipment by Impco.

Chlorine dioxide bleaching will be installed in the sulfite and soda mills.

Penobscot recently completed an installation of some 300 3-in. Bauer Centri-Cleaners on its sulfite and soda pulps.

Their Activities are Expanding

Appleton Machine Co. sales team (left to right): HARRY W. BROWN JR., now Asst. to Mgr. of Sales Engineering; H. K. ABRAMSON, Sales Engineer, and RAY S. BENDER, Mgr. of Sales Engineering. They report to DICK RADSCH, V.P. of Sales. Appleton Machine recently took over sales rights of Cram Dryer Drainage System. Mr. Brown moved to Appleton in Jan. 1956, from Albany, N.Y., whence he covered N.Y., Pa., N.J. and Del. mills, to head Appleton Machine's Gilbert & Nash Guide Division and since has been placed in charge of Cram system sales. He also covers his old territory. Mr. Bender has been with Appleton Machine ten years. Mr. Abramson joined last April.

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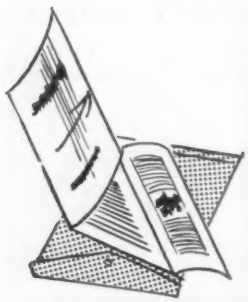

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Famous for resistance to wear, Butterworth Dura-Smooth Rolls — for coated, super, glassine or embossing applications — are furnished either new or refilled. They're made of the finest long staple cotton or paper, and are locked on the shaft under high pressure . . . can't loosen or slip. For information or quotation, write or call.

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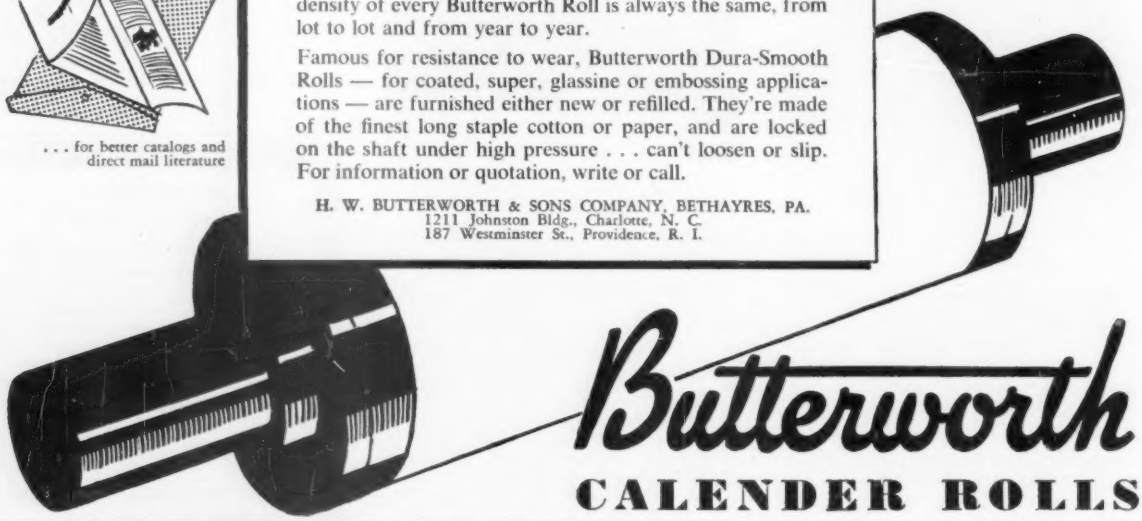

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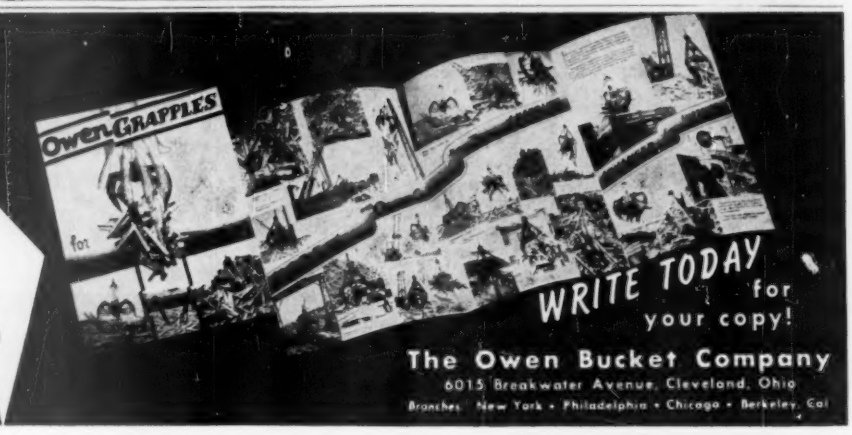

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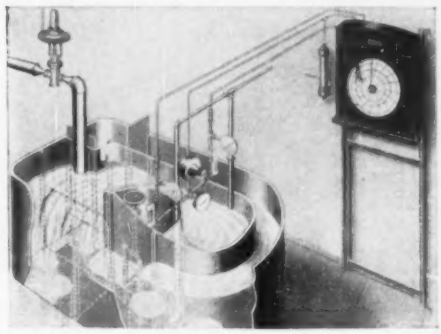

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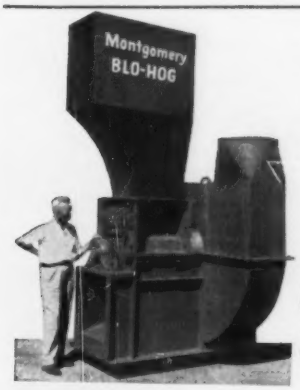

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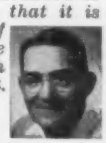

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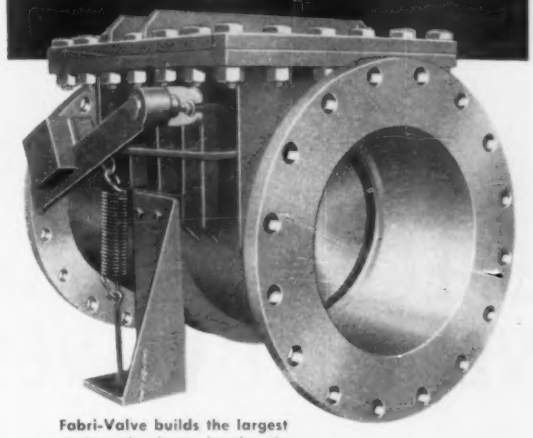

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This counterweight, spring-action check valve is another example of a Fabri-Valve engineered and custom-fabricated valve. Specifically designed to the job to be performed, this valve was fabricated of mild steel with stainless steel interior trim. And like all custom-made Fabri-Valves this 20" swing check will operate with perfect efficiency for years.

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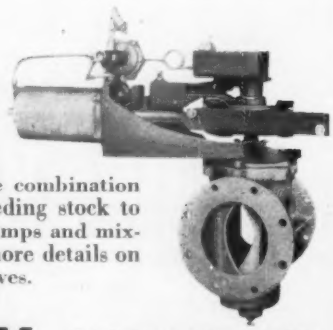

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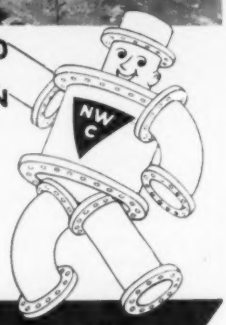

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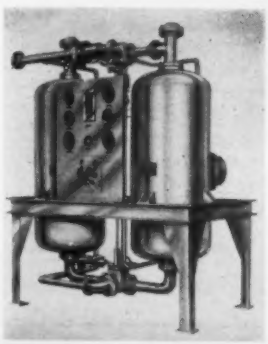

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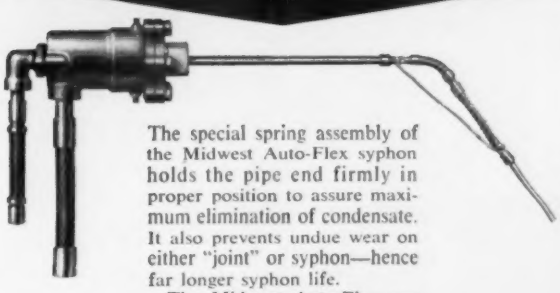

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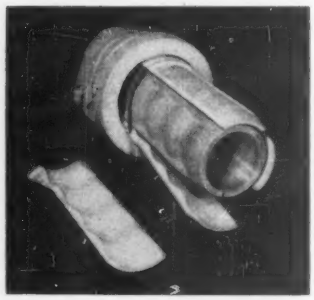

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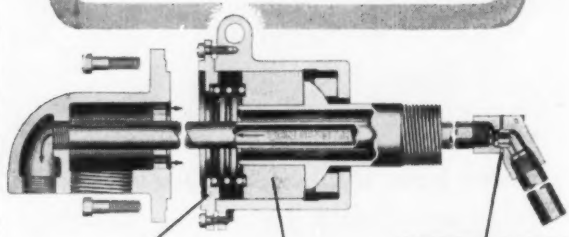

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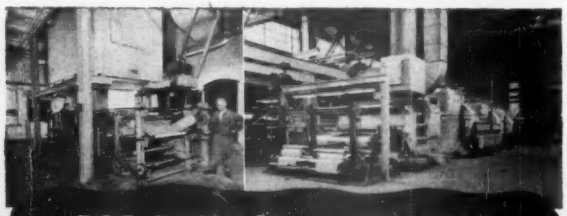

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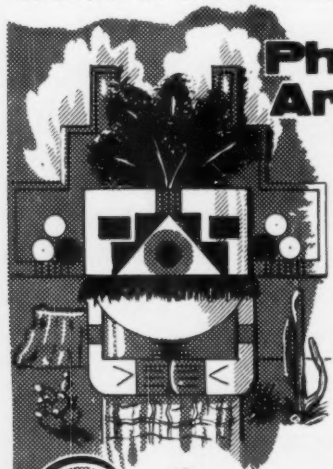

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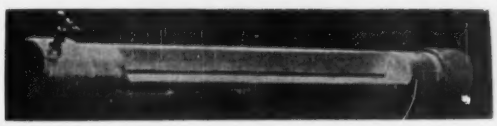

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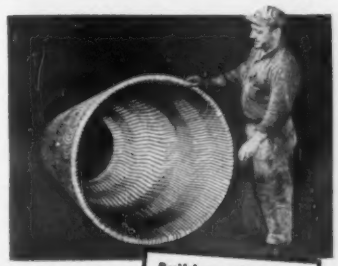

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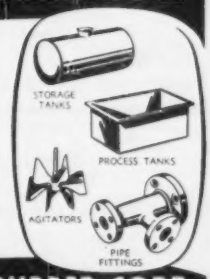

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The LAST WORD PULP & PAPER EDITORS' PAGE

What's Coming in January

Next month—watch for it—PULP & PAPER will present the story which many of our readers have been waiting for: The complete story of the new glassine-greaseproof paper mill built at Longview, Wash., created by the partners, Rhinelander Paper Co., division of St. Regis, and Weyerhaeuser Timber Co.

We can promise you some excellent and unusual mill operation photographs. Also a story which doesn't just relate the obvious features in a mill. It describes non-standard practices, unusual features, details that are different and interesting.

Louis H. Blackerby, who has been writing articles about pulp and paper making in Columbia River-Willamette River region for PULP & PAPER since before World War II, has produced an excellent story—in pictures and words that you won't want to miss.

We are pleased that this is going to feature our January issue—it will be in a sense, a sort of salute to Folke Becker, who is retiring as chairman of Rhinelander Paper Co. in that month. Mr. Becker has served Rhinelander well. But he also has served well in the councils of this industry, and particularly in its development in the states of Wisconsin and Washington.

Sad Story of a Predecessor Magazine

Our coffee-time reading recently revealed that there was a magazine with almost the same name as PULP & PAPER published in London back in the early 1900's. We thought perhaps you would be interested in the story, which we read in The Paper Maker of London. The author was H. G. Willis, whose career in this industry dates back to the 1890's.

Incidentally, he said, in those days it was customary to show up in the offiice in top hats and frock coats if an important meeting was in the offing. He recalled a meeting of the British Woodpulp Association, where the gentlemen, so dressed, took coffee together at Spiers & Ponds restaurant under the arches of Ludgate Circus.

Also in those days, he said, many young Swedes and Norwegians entered London pulp and paper offices as "volunteers," to learn the language and manners and the business of the British mills. He didn't make a point of it, but it was quite clear to us that they did this in order that, later in life, when they returned to Scandinavia they might know how to sell more Scandinavian woodpulp to Britain. Might be a lesson here for American pulp traders, who have their eyes on overseas business these days.

But to get to his story of the short-lived magazine which was titled "Paper & Pulp." A number of firms in the trade conceived the idea of running a trade journal in order to air their views on the state of the pulp market, to indicate to buyers the prices for different grades, and to publish Board of Trade Returns.

The Scottish shorthand typist of Mr. Willis's firm was induced to take on the job as editor, a small office was rented in Godliman Street, the scissors and paste got to work and the trade journal known as "Paper & Pulp" started a checkered career.

Paper for each issue was supplied by a different papermaker, who thought an advertisement to the effect that the paper was made at his mill was sufficient inducement and payment.

Subscribers were not numerous, and advertisements difficult to get when it became known that some 400-500 copies only were to be printed each month.

Mr. Willis helped in the circulating and posting and was allowed 1½d. for every copy posted or delivered. He was thus able to put a few shillings in his pocket by delivering some 30-odd copies round the city to pulp and paper houses!

After some months the supply of free paper ceased and the printers were called upon to supply paper for a reduced circulation. The interested parties finally had a meeting and "whip round," paid off the printers and decided to call it a day.

"Covering" The South

The politicians—remember them—didn't have anything on PULP & PAPER when it came to "covering" the South this past fall.

Al Wilson, editor, and Bill Diehl, Southern editor, teamed up in a tour of the Middle South, to attend the kraft pulping meeting in New Orleans and several mills. In the great state of Alabama, particularly, they found no less than three new big mills now a-building and existing mills greatly expanded or in the throes. Mr. Diehl and Ralph David, sales manager, a few weeks earlier made a tour of the Southeast. Ken Johnson, assistant sales manager, who got his training working in a Wisconsin mill which makes kraft paper and pulp, also made his "maiden voyage" into the South from his Chicago base and found lots of familiar kraft pulp and paper making.

You can look forward to some topnotch stories of genuine interest and value from the South in future issues of PULP & PAPER.

Paper—Around the Clock

Hardly an hour in your waking day passes without contact with paper. In the morning you take milk from one of 11 billion cartons produced a year, and remove bread and bacon from paper wrappers. You flick on the radio to listen to news and weather reports read from paper scripts. Your car travels on paper-filtered fuel. You reach work with money in your wallet and newspaper under your arm.

At the shop or office you need written instructions, bills, writing paper, envelopes. Incoming and outgoing business rides on paper. During the mid-morning break you drink water from a paper cup and dry your hands with paper towels. At lunch the waitress takes your order on paper. Cigars and cigarets are wrapped in paper for your protection. At night it's more paper—books, magazines, a chessboard, or a television show dependent on paper scripts and contracts.—*APPA Community Relations Progress.*

IT IS MORE IMPORTANT to know where you are going than to get there quickly. Do not mistake activity for achievement.—Newcomber.

new data proves: UREA is excellent for

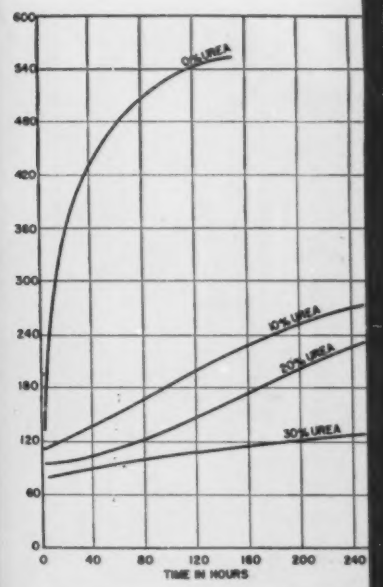
Viscosity Control

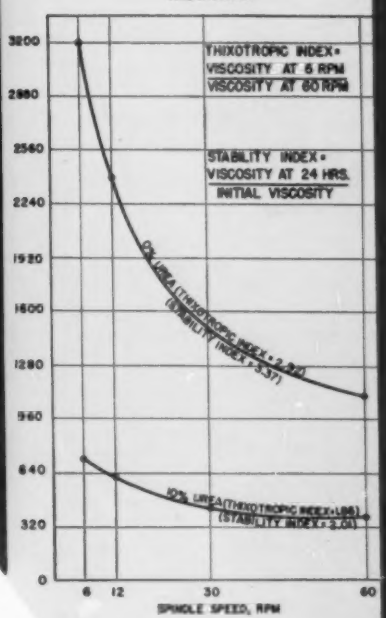
in paper coating

We can show you just how effective UREA is in controlling viscosity of modified starch, casein and Alpha Protein adhesive dispersions—and in reducing thixotropic index too.

The means: actual experimental data in the form of 15 graphs prepared by our research group, and based on field trials. Two graphs are presented on the right.

This data indicates that small amounts of UREA— • give large viscosity reductions, and drastically lower the rate of viscosity increase on standing • lower thixotropic index • permit use of adhesive dispersions with higher solids content.




THIXOTROPIC INDEX = VISCOSITY AT 6 RPM / VISCOSITY AT 60 RPM
STABILITY INDEX = VISCOSITY AT 24 HRS. / INITIAL VISCOSITY
0% UREA (THIXOTROPIC INDEX = 2.97)
(STABILITY INDEX = 3.37)
20% UREA (THIXOTROPIC INDEX = 1.86)
(STABILITY INDEX = 2.01)
SPINDLE SPEED, RPM
BROOKFIELD VISCOSITY IN CENTIPOISES AT 26° C.

Because UREA is readily available, and effective, paper coaters interested in improving operations and lowering costs will want to examine this data in detail. Send for the paper "Viscosity Control of Paper Coating Adhesives with UREA" by Belche and Ellis for the complete story.

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Established 1846

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